MAY 1953

FIREMEN

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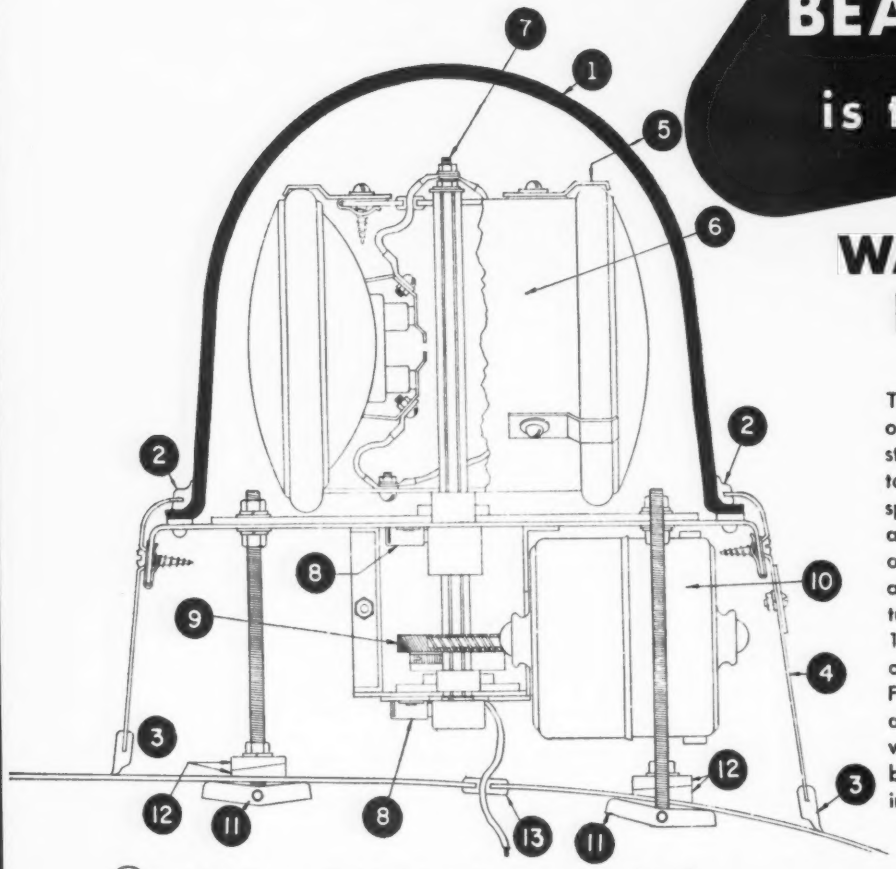

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There are other rotating lights, but only one Beacon Ray! The difference is in construction and design and it will pay you to know what these differences are when specifying for your apparatus. Recently a nationally-recognized state testing laboratory tested the Federal Beacon Ray and its imitators. Out of 17 standard features tested, Federal proved superior on 16 counts and tied with the second best on one (a minor construction detail where Federal was shown to be "more than adequate"). Beacon Ray excelled in cold weather starting, in resistance to vibration, resistance to wear, plus the 12 important features illustrated below:

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(2) Dome Gasket — Dome "floats" between a rubber gasket and 4 grommets to eliminate vibration. Gaskets keep out rain and snow, but allow for *ventilation* inside the dome. Ventilation eliminates condensed moisture which would reduce beam intensity, cause corrosion and create short circuits.

(3) Skirt Gasket — Like the above, prevents vibration, protects against sleet and snow, and gives a neat appearance to trimmed edge of skirt. Ventilation and drainage is also provided in this gasket at lowest point of the skirt. Keeps mechanism dry by letting condensed moisture escape which would otherwise fill the space under the skirt, rusting the roof, corroding the mechanism and possibly short circuiting the motor.

(4) Simple one-piece skirt fits low on the dome and does not obstruct the beams of light from the lamps. Removal of three screws permits dome and skirt to be lifted off together, easily and quickly for change of lamp or inspection of mechanism. Such removal breaks no necessary or permanent weather seal.

(5) Lamp Retainers — Lamps are retained by three metal clips each in turn attached to lamp holder by a single screw. Clips hold lamps firmly in place with filament vertical for most effective beam spread, but permitting other arrangement.

(6) Lamp Support — The lamp support is tubular for strength, firmly attached top and bottom to the vertical drive shaft so that it is vibrationless.

(7) Drive Shaft — The 2 conductor tubular insulated drive shaft also serves to conduct both positive and negative current from the lamp leads which attach firmly and rotate with the shaft. Twisting or flexing of leads is not necessary so that breaking or short circuiting is eliminated.

(8) Contact Brushes — Contact of both positive and negative circuits, between stationary and moving parts of the light is maintained by spring tensioned brushes against copper commutators. Commutator surfaces are vertical and therefore self-wiping. This means constant, uninterrupted current flow, no arcing, no pitting or overheating. Also using brushes on both sides of circuit prevents damage to bearings caused by a grounded circuit.

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(10) Motor — Special shunt wound motor provides a more constant speed regardless of temperature or voltage variation. Motor bearings are specially designed to assure instant start even in sub-zero weather.

(11) Mounting Toggles — Toggles permit installation from "above" and "leveling" of light at minimum height regardless of roof contour. These toggles support the reinforced main frame of the light.

(12) Tapered "Weather Seal" Washers — Tapered washers in pairs, level up on any roof contour. *These are the true "weather seal"* that keep rain, snow and condensed moisture from getting under the roof and disfiguring upholstery. Even if the entire light mechanism is removed, the mounting toggles and "weather seals" need not be disturbed.

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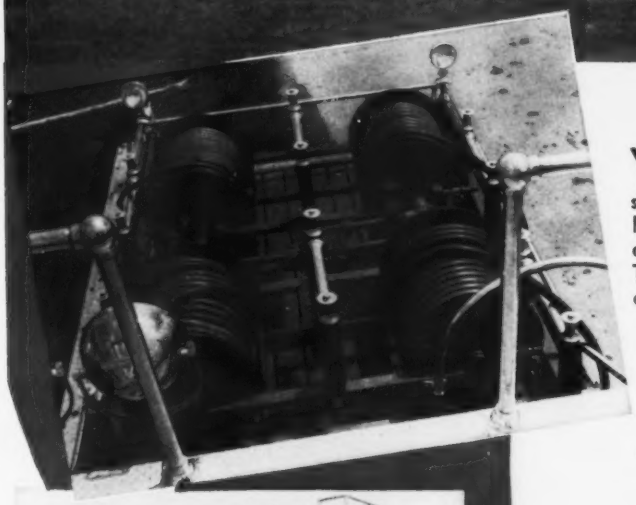

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Firemen

Volume 20 — Number 5

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Contents for May 1953

	Page
57th NFPA Annual Meeting	10
Drill Tower Evolutions at FDIC	11
A-Bomb Explosion in Nevada	12
Making a Good Job of It, by Warren Y. Kimball	14
Another Nursing Home Tragedy	15
Rural Fire Fighting Outline	16
Preventive Maintenance for Aerial Ladders, Part II, by G. R. Layden	20
Winners of the 3rd Fire Foto of the Year Contest	22
Fires in the News	24
Chief Fields Heads Omaha Fire Department	25
Bus Ride to FDIC	25
Industrial Fire Protection	26
NFPA Gases Engineer	27
St. Louis Ladder Crew Makes Good Catch	28
A Big Little Fire Department, Part II, by Chief Charles T. Reveley	29
Dates to Remember	30
"The Teacher-Fireman Team"	32
"Fire Service Ladders"	32
Letter to FIREMEN	34
Membership Report	36
What's New in Fire Equipment?	38
Index to Advertisers	38

Cover Picture

With the increasing use of liquefied petroleum gas for domestic and industrial installations throughout the nation, most fire fighters who have made inspections of such installations have become acquainted with the safe practices to be followed in the storage and handling of this fuel.

They are aware that the gas is shipped and stored under moderate pressure in a liquid state and converted to a gaseous state upon relief of pressure. All installations of LP gas should follow NFPA Standard No. 58 — Standards for the Storage and Handling of Liquefied Petroleum Gases — which is available as a separate pamphlet and also included in Volume I of the National Fire Codes. Fire departments with LP gas installations in their communities should be acquainted with the provisions of this standard.

When stored and handled properly, LP gas provides a safe, convenient fuel. However, when fire does occur, fire fighters will be faced with intense heat from the burning gas which creates an exposure and explosion problem. Properly constructed containers are equipped with relief valves which will vent when the gas is subjected to excessive heat. (Top photo.) However, if a number of containers are involved in a fire area the contents may be heated faster than some valves can operate. In such cases the pressure within the container may cause it to burst and "rocket" dangerously.

Where possible, fires in escaping liquefied petroleum gas should, in general, be controlled by stopping the flow of gas. If this cannot be accomplished it is usually safer to let the fire burn. Plenty of water under good pump pressures should be used to cool exposed containers and other materials.

This month's cover and pictures on this page show conditions encountered by Augusta, Maine, fire fighters on April 6 when fire involved an LP gas container filling plant in that city. The fire was discovered by the plant manager in the charging room of a 1-story concrete building containing twenty filled 100-gallon containers and ten empty containers. He attempted to control the blaze with an extinguisher but was driven from the building by the rapid spread of flames.

A box alarm was transmitted by the manager of a nearby gasoline storage plant. Members of the Augusta Fire Department, headed by former Chief Haskell and Deputy Chief Albert Chadwick, responded and directed hose streams to protect 18,000- and 30,000-gallon storage tanks near the involved building. (Photo at left.) Tanks on the property of the nearby gasoline storage plant, and a supply of baled sulphite were similarly protected. Fire fighters were hindered by exploding 100-gallon cylinders but loss was confined to an estimated $50,000. (*Photos by Kennebec Journal.*)

You Are Invited to Attend the

57th NFPA Annual Meeting – May 18-22, 1953

Palmer House, Chicago, Illinois

A STIMULATING program of fire protection and fire prevention topics to suit the many and varied interests of members of the fire service has been scheduled for the 57th Annual Meeting of the National Fire Protection Association. Fire department personnel, especially those in Midwestern states, have an excellent opportunity to hear discussions of the latest trends in fire fighting, fire protection and fire prevention. Headquarters for the five-day meeting will be in the Palmer House, Chicago, Illinois, May 18–22, 1953. A cordial invitation to attend is extended to all NFPA members, readers of FIREMEN, and others interested in safeguarding life and property against fire.

A preliminary program and reservation cards for the meeting was included in the April issue of the NFPA *Fire News*. The $5.00 registration fee should be paid at the reservation desk which will be located convenient to all rooms where technical sessions will be conducted.

Readers of FIREMEN perhaps will be most interested in the sessions on MUNICIPAL FIRE PROTECTION and RURAL FIRE PROTECTION, which will be conducted on Thursday, May 21, morning and afternoon respectively. The former session will feature an address on current problems of the fire service by Chief George R. McAlpine, of the Oklahoma City Fire Department, Oklahoma, and President of the International Association of Fire Chiefs.

Other speakers during this session will include: Chief Henry G. Thomas, Hartford, Connecticut, Fire Department, and Chairman, NFPA Committee on Fire Department Equipment; Joseph I. Fetters, University of Missouri, Chairman, NFPA Committee on Firemen's Training; Paul B. Hartenstein, Deputy Fire Commissioner, Philadelphia, Pennsylvania; Lloyd Layman, former chief of the Parkersburg, West Virginia, Fire Department, and author of the books "Attacking and Extinguishing Interior Fires" and "Fire Fighting Tactics"; and R. D. MacDaniel, Grain Dealers Mutual Insurance Company, and Chairman, NFPA Committee on Fire Casualty Statistics.

THE session on RURAL AND FOREST FIRE PROTECTION on Thursday afternoon will include an address by Ira C. Funk, Chief of Fire Equipment and Aeronautics, U. S. Forest Service, who will speak on the forest fire problem. Chief Charles T. Reveley, of the Stephens, Arkansas, Fire Department, will be a guest speaker. (See FIREMEN for April, 1953, and page 29 of this issue.) Ohio State Fire Marshal Charles R. Scott will talk on the Ohio Rural Fire Prevention Program.

Three All-day Sessions Monday

ON Monday, May 18, there will be simultaneous sessions including meeting of the FIRE MARSHAL'S SECTION, an AVIATION SEMINAR, and the ELECTRICAL SECTION. The former session will feature discussion of fire law enforcement on the state and municipal levels, flammable liquids problems, a panel discussion on public relations and a panel discussion on the fire problems of nursing homes.

Many interesting problems of fire safety will receive attention in the AVIATION SEMINAR, including hangar protection, aircraft crash rescue and fire protection, and other matters of particular concern to fire fighters of municipal and rural departments.

Monday evening will include the FIRST GENERAL SESSION, featuring reports of NFPA officers and an address on Civil Defense by General Otto R. Nelson, Jr., U.S.A. (retired), Director of the East River Project. (See FIREMEN for February, 1953.)

Tuesday Sessions

FLAMMABLE liquids, gases, and chemicals, motor craft, and other hazardous materials will be discussed during the morning session on Tuesday, May 19. Standards will be presented for adoption.

STRUCTURES, OCCUPANCIES, and FIRE, the afternoon session, will include presentation of standards and revised standards for adoption. The New York State Building Code and fire protection problems of religious institutions will be covered in feature addresses.

A motion picture program of the latest fire fighting and fire prevention films has been scheduled for Tuesday evening.

Storage and Warehousing

WEDNESDAY will feature a morning session on fire problems of storage and warehousing, with discussions and standards presented on industrial tractors and lift trucks. Other addresses will cover the storage of petroleum products and alcohol and fire loading of buildings.

In the afternoon all members and guests are invited to visit Underwriters' Laboratories where demonstrations of tests and testing methods will be shown during an "open house."

Thursday Sessions

AS previously mentioned Thursday will feature sessions on municipal and rural fire protection.

In addition, an all-day session on INDUSTRIAL FIRE PROTECTION will be conducted, with special attention given to plant fire safety programs and industrial fire prevention.

Final Session

NEW fire protection advancements will be covered in the final session on Friday morning. Discussions on spray sprinkler heads and the presentation for adoption of standards for spray sprinklers will highlight this morning session. Fire detection engineering and aircraft occupancy problems will be among the other feature addresses of the closing session.

Drill Tower Evolutions - FDIC - Memphis

FOR a number of years at the Fire Department Instructors Conference, held annually in Memphis, Tennessee, it has been the practice to show interesting new evolutions that might be employed on the fire ground. The 25th "Silver Anniversary" FDIC was no exception and a number of evolutions were presented at the Memphis Drill Tower, adjacent to Fire Department headquarters.

The evolutions program is headed by Chief Joseph I. Fetters, of Missouri, Chairman of the NFPA Committee on Firemen's Training, assisted by Warren Y. Kimball, Manager, NFPA Fire Services Department, and Editor of FIREMEN magazine; and District Chief C. L. Scott, Drillmaster of the Memphis Fire Department. The evolutions are performed by Memphis fire companies assigned to work with the committee and several days are devoted to drills and rehearsals before this program item is presented to Conference members.

Shown in the first drill tower evolution at the 1953 FDIC was a smoke extractor powered by a 1½-in. hose line and made in St. Louis, Missouri, Fire Department shops under the direction of Chief Fred H. Witler, Master Mechanic of that department, and a member of the NFPA Committee on Fire Department equipment.

The next evolution (above) was an improvised heavy stream arrangement for small fire departments. A short ladder was lashed to the back step of a pumper. A playpipe with a large tip was secured to this and supplied by a siamese through two 50-ft. lengths of 2½-in. hose from the pump, which in turn was supplied by two lines from another pump or a hydrant. As shown in the photograph an excellent stream of 580 gpm was developed which had considerable maneuverability.

A portable pump furnished by McCulloch Motors of Los Angeles, and weighing only 57 pounds took suction from an improvised suction basin formed with ladders and a salvage cover. It supplied a large pumper through a line of light weight 3-in. hose designed to serve as a supply line from water supply to a pumper. This hose was furnished to the Committee by the Boston Woven Hose and Rubber Company. In this demonstration the portable pump was able to supply a 2½-in. line and two 1½-in. lines simultaneously.

The purpose of this evolution was to show how water from farm stock ponds could be relayed by a small portable pump to a rural pumper with maximum results through reduction in friction loss in the supply line. The large hose was built to the specifications of the NFPA Fire Services Department in an effort to get a supply hose that would combine light weight with large capacity.

Another evolution which demonstrated the superiority of the 3-in. "Litewate" supply line was a comparison between a 2½-in. supply line from a hydrant to the pumper and the 3-in. supply line. The pumper placed near the fire supplied two 50-ft. lines to a multiversal nozzle with a 1½-in. tip. With a supply through a 100-ft., 2½-in. line, only 403 gpm at 36 pounds was obtained. With the 3-in. supply hose the flow was 586 gpm at 76 pounds nozzle pressure.

A Memphis fire company with fire coats marked with "Scotchlite" to prevent accidents in the dark and in smoke. At left is a common farm stock tank truck that provided an excellent suction basin that would be useful at rural fires. *(Photo by McCulloch Motors Corp.)*

Explorer Scouts from Minneapolis showed how to rescue a victim imprisoned in a wrecked car. The boys administered oxygen and first aid while a wire cutter and a power saw were used to clear wires and an electric service pole from the vehicle. *(Photo by McCulloch Motors Corp.)*

A-Bomb Explosion in Nevada

ON March 17 the American public was made conscious of some problems our cities face in atomic warfare when an A-bomb or "nuclear device" was exploded for the edification of civil defense officials at the U. S. Atomic Energy Commission's Nevada Proving Ground, a 640 square mile tract of desert land, 65 miles northwest of Las Vegas, Nevada.

The particular device tested was described as being slightly less powerful than the Hiroshima atomic bomb but, as the accompanying pictures show, it demonstrated heat and blast effects which are of the same kind as were reported at Hiroshima. At 3,500 feet, where one test house was located, the blast wave caused its collapse, just as it did wood-frame houses at Hiroshima. At this test house the heat from the fireball was very intense for a few seconds, enough, as can be seen, to set the outside wood surface smoking on the side toward the blast. Metal venetian blinds kept this radiant heat from reaching inside the house. One reason for locating this test house at 3,500 feet was because it had been calculated that heat at this distance would probably not cause a fire. Pictures show no flaming and that charring has stopped before the snuffing effect of air wave.

In a similar house at 7,500 feet, windows were broken and plaster cracked, but there was no scorching or fire. In both houses there were no stoves, electrical installations nor other sources of secondary fires. These precautions were taken so the data on blast effects would not be lost due to fire in the building.

The civil defense test was the twenty-third carried out at the Nevada Proving Ground. In its semiannual report issued in January of this year, the U. S. Atomic Energy Commission indicated that it has been possible to keep practically all of the harmful effects of the tests within the proving ground area. No person, for example, has been exposed to a harmful amount of radiation from radioactive particles falling out of the A-bomb clouds. No person has been injured from the blast waves, although the blast has cracked plaster and broken windows in nearby communities.

The report points out that under the operating controls used in Nevada, thousands of military personnel have occupied foxholes within 7,000 feet of the detonations without casualty, and persons with no protection other than goggles have witnessed tests within a distance of 10 miles without injury. The report has some other figures of interest. The figures are all expressed in terms of an A-bomb of "nominal" energy yield, approximately that of 20,000 tons of TNT and approximately the energy release of the atomic bomb exploded over Hiroshima and Nagaski. Such a bomb is described as a 20-KT (kiloton) bomb. The nuclear device of the March 17 test was of 15-KT energy.

Characteristics of a Nuclear Detonation

AN atomic explosion releases energy as heat, light, and nuclear radiation. The heat energy, which is released instantaneously, produces very hot gases at a high pressure. The outward movement of these gases creates a shock wave, which is capable of severe destructive effects.

A portion of the nuclear radiation is released at the time of detonation as each reacting atomic nucleus fissions, or splits into two parts. The remainder is emitted by these parts, called fission products, over a period of time. These radioactive fission products are components of the cloud which follows a nuclear detonation.

Within a few thousandths of a second after a detonation, the heat, light, and instantaneous nuclear radiations sweep the target area, and a luminous sphere or "fireball" appears as the air is heated to incandescence by temperatures approaching a million degrees centigrade. At the end of 1 second, the fireball reaches its maximum radius of 450 feet and begins to rise like a gas balloon, and the shock front of the air blast is visible 600 feet ahead of the fireball.

Formation of the Cloud

BY the end of 10 seconds, the intense luminosity of the fireball has almost died out, the shock wave has traveled 12,000 feet and passed the region of maximum damage, and the formation of the cloud has begun. The immediate effects of the explosion have run their course, leaving only the delayed effects of residual radiation and the possibility of more distant air blast effects. The cloud, containing sucked-up dirt and debris, and radioactive oxides of fission products, rises high into the air. It may remain visible as a cloud for an hour or more before dissipating into an invisible mass of air and particles of debris.

Range of Effects

Neither heat nor the nuclear radiation released at the moment of the detonation is hazardous outside of the limits of the proving ground. Beyond about 7,000 feet, the nuclear radiation is virtually harmless. The heat resulting from a detonation will burn skin seriously and will ignite combustible materials 2 miles from the target area, but is noticeable only as a wave of warmth at a distance of 10 miles.

(An editorial observation should be interpolated on the foregoing sentence which is an exact quotation from the AEC report. That combustibles may be ignited at 2 miles is a correct generalization, but it should not be interpreted to mean that ignition will be certain or that ignited material will always continue to burn.)

The other three effects of an atomic explosion — light, blast waves, and residual radioactivity in the cloud — can present a safety hazard outside of the proving ground under certain conditions.

Light Effects

Viewed at a distance of about 6 miles, the brilliant flash of light from a nominal detonation is 100 times brighter than the sun. Flashes from Nevada tests have been brightly visible in broad daylight in Las Vegas, 80 miles away, and one was reportedly seen as far away as Kalispell, Montana.

(Photos, clockwise) (1) Test house at 3,500 feet in first 1/1000 of a second. **(2)** At 11/24 second, heat of fireball has ignited thinnest wood as in shutter and door panels. Wood walls facing blast are scorched. Whitewash was used instead of paint on outside of house to minimize ignition. **(3)** The period of heat radiation is very short but the quantity of heat per square inch of wood surface is very large which results in charring and smoking, but no flame. Time, ¾ second. **(4)** Heating and burning stopped before blast effect hit. At 1 19/24 second blast wave hits house and snuffs out weak fires on wood surface. Blast from air movement begins to tear house apart. Surfaces are white where light from fireball is reflected from unburned boards and shingles. Charred wood photographs black. **(5)** House is badly wrecked but no fire resulted. Stoves, electric wiring, and other possible sources of secondary fires were not installed in house.

The hazard from flash is confined to the test site and the immediately adjacent region up to 30 miles from the target area. The brilliant light could temporarily blind or confuse motorists or airplane pilots in this area. In addition, exposure of the unprotected eye at too close proximity would result in a blind spot which might be permanent.

Cautions are issued against the use of binoculars at any point within the site region. Non-official air traffic over the site is prohibited, and warnings against flight in the region are issued to pilots through the Civil Aeronautics Authority. Roadblocks have been maintained on occasion to prevent hazard to motorists, but the usual precaution is the general warning of an imminent operation which is issued in the site region.

Air Blast Effects

The air shock wave produced by an aerial nuclear detonation of nominal yield is the most important agent in producing destruction. Most of the blast damage from an explosion of this size occurs within a radius of 12,000 feet during the first 10 seconds after the detonation. By 30 seconds, at a distance of about 7 miles, almost all of its immediate energy has been dissipated and only light damage, such as to plaster and windows, results. At a distance of 7 or 8 miles an observer may feel a jolt or a strong push from the air blast, accompanied by one or more sharp slaps of sound.

Outside the definable area of immediate effect, air blast may behave erratically because of meteorological conditions Blast waves which have bounced over observers only 10 miles from ground zero, creating little noise or shock, have broken windows and cracked plaster 80 miles away in Las Vegas. The blast waves from one detonation were registered on equipment and distinctly heard more than 600 miles away in Albuquerque, New Mexico.

Making a Good Job of It

by

Warren Y. Kimball

Packing A Heavier Initial Punch

IT'S a sound principle never to gamble that the initial attack on a fire will be adequate, especially where life is at stake. In areas of serious life hazard occupants are frequently trapped by fast spreading fire, perhaps caused by "explosion" of an oil space heater or by flames sweeping up an open stairway. The booster line is inadequate and almost a waste of manpower. The 1½-in. line may be inadequate to get results as fast as may be necessary. Yet conventional methods of placing the 2½-in. line in service may be too slow to facilitate rescue and prevent further extension of the fire. There is always the necessity of choosing between the easy-to-handle 1½-in. line and the slower 2½-in. line.

We here suggest an engine company rig and method of operation that resolves these difficulties for areas where fire duty is frequent and hydrant spacing is reasonably good. These are not new ideas but the integration of a number of techniques that have been proven successful in several outstanding fire departments.

This proposed unit will be a heavy duty engine company rigged for a hard initial attack without loss of time. The truck will have a 1000 gpm class A pumper with not less than 240 HP motor. The more power it has the better, because acceleration under congested traffic conditions is important.

The unit will have a 300-gallon (40 cubic foot) water tank to spark the initial attack.

The tank will be connected to the pump by a 3-in. pipe. The pipe will have a clapper valve so that water can only flow in one direction. There will be a small by-pass valve so that the operator can refill the tank at his convenience. The tank also will have a water level gage.

THE initial attack equipment will consist of two 200-ft. preconnected lines of 2-in. hose having 2½-in. couplings. The nozzle on one line will be an adjustable pattern 2½-in. fog nozzle discharging 160 to 200 gpm at 100 psi nozzle pressure. The other line may have a combination solid stream fixed pattern fog nozzle with approximately a 1-in. solid stream tip and fog discharge head of better than 100 gpm.

The two-inch hose will be carried in two layers in a small hose compartment across the truck body above the water tank. The hose will come off in either direction in a straight line. The 2-in. hose is almost as easy to handle as the 1½-in. hose and provides the flow for the 2½-in. nozzles because in short lines with the pump close to the fire, friction loss is no problem. Normally, 200-ft. lines would be ample but two donut rolls of 2-in. hose would be carried in a running board compartment to extend lines as necessary.

The truck will have a divided body with two compartments filled with light-weight, easy to handle, 3-in. supply hose. This hose can have 3-in. couplings which are lighter in weight than "5-piece" 2½-in. couplings on 3-in. hose. A 2½-in. hydrant adapter will be carried on each butt that is to be dropped at the hydrant. A 3-in. to 2½-in. adapter will be provided at each 2½-in. pump inlet.

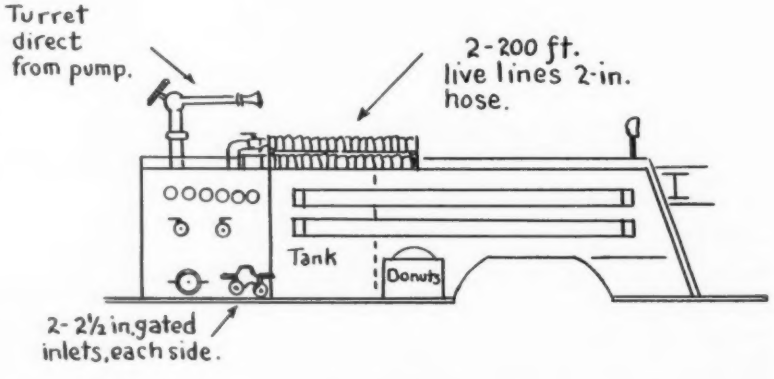
There will be four 2½-in. inlets each with quarter-turn positive action control valves. Two of these inlets will be placed at each side. Rear inlets are not desirable because it is important that the pump operator be in position to know when water has arrived from the hydrant and when he is using the maximum flow available through the supply lines. Compound gages are not accurate at low pressures.

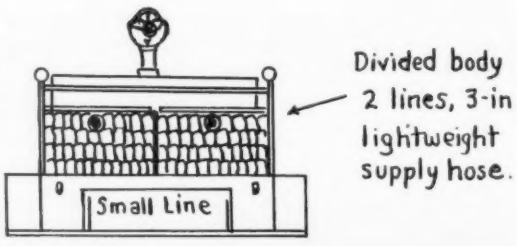
ATOP the truck and directly connected to the pump will be a 1000 gpm turret nozzle having an adjustable pattern fog head of a type capable of 750 gpm at 100 psi or 1000 gpm at 150 psi. Gate valve and pressure gage controlling the turret nozzle will be at the pump operator's position.

There will be a 200-ft. line of 1-in. hose for use on obviously trivial fires. The truck will have a 30-ft. aluminum extension ladder and a 14-ft. roof ladder.

Manning

The unit will respond with one officer, a pump operator, and four hosemen. The officer and hosemen will be equipped with "all-service" masks on their firecoats similar to the method employed in Miami,





(Above) and (right): Side and rear views of the proposed engine company rig, showing placement of hose loads. Hose of the 2-inch size has been listed by the Underwriters' Laboratories and is obtainable from major hose manufacturing companies. For other useful applications of 3-in. hose see page 11 of this issue.

Florida (FIREMEN, January, 1953). The unit will also carry two self-contained breathing apparatus.

Fire Ground Procedure

At building fires where the company is first due or where there is evidence of a working fire, a hydrant man will drop off with a single 3-in. line, a 2-way hydrant wye gate and wrench. A donut roll hose finish or a hose rope may be used to speed this operation.

The apparatus then proceeds to the front of the fire or just past the fire, taking care not to block access for ladder trucks. The officer leads the way and two hosemen advance the first 2-in. line to the desired spot. The pump operator charges the first line as soon as ordered to do so, using water from the tank. This will give 90 to 120 seconds continuous supply depending upon the setting of the nozzle. Pump pressure will be 150 to 160 psi depending upon the elevation.

Meanwhile, the remaining hoseman has broken the 3-in. supply line and attached it to a gated inlet near the pump operator. He then ascertains whether the hydrant supply will be needed and if so calls for water.

When water is called for, the hydrant man charges the supply line having previously attached a gate that will permit a second line if needed. After the supply line is charged the hydrant man and other hosemen run out the second 2-in. line as directed by the officer.

As soon as water from the hydrant reaches the pump, the clapper valve shuts off the tank supply and the operator is ready to charge the second line. The 3-in. line will easily supply the needed 350 to 400 gpm even from a relatively low pressure hydrant and will provide greater flows from a stronger hydrant.

WHERE the fire is such that the large pre-connected fog gun is needed, two 3-in. supply lines will be dropped at the hydrant. This will provide an ample supply to put the gun in service except in rare cases where hydrant pressure is extremely poor. In such instances lines will be run to the two other pump inlets to increase the supply. These can be lines from pumpers responding on multiple alarms because water supply problems are seldom encountered when the first pumpers get to work.

After the fire has been knocked down, or even before this, the 2-in. lines can be operated as hand lines.

Where this quick rig is employed the crew should provide more gpm per man in less time than with other units using equivalent fire company manpower. Where the unit is operated in immediate conjunction with other companies, such as a squad unit furnishing additional men, somewhat lower manpower might be permitted. However, if lines are to be advanced quickly up stairways, ladders or fire escapes, sufficient manpower should be provided.

Photo by Fulmer & Cole, Inc.

Another Nursing Home Tragedy

THE intense fire in the scene above envelops the remains of the Littlefield's Nursing Home near Largo, Florida, where 32 patients and a nurse perished on March 29. In addition, one of a group of rescued patients being transported to a hospital by car suffered fatal injuries and the driver was killed when the vehicle was involved in an automobile accident. The nursing home patients were elderly persons, many with physical infirmities and declining mental faculties. Many of them were too shocked or terrified to attempt to move to safety when the alarm was given.

The home was situated in Pinellas County, approximately four miles south of Largo, seven miles south of Clearwater and fifteen miles north of St. Petersburg. It consisted of two 1-story buildings. The main building where the fire originated housed 45 patients, Mr. and Mrs. Littlefield, and a nurse. The wood frame structure had exterior lapboard siding and the ceiling and room and corridor partitions were constructed of combustible fibreboard. Most of the patients' rooms had an exterior wall and all such rooms were said to have at least one outside window.

Thirteen old men were housed in the 1,000 sq. ft., 1-story building located 11 feet south of the main building. This dwelling was of similar construction. Also close exposures were a 1-story, 4-room cottage six feet from the northeast corner of the main building, and three trailer homes approximately twenty feet north of the north wall of the main building.

Discovery of the fire was by a patient who woke the Littlefields and told them that the home was on fire. Smoke and flames were evident in the supply room and Mr. Littlefield attempted to control the fire with extinguishers. When these efforts failed he began to arouse patients, assisted by Mrs. Littlefield and two attendants. However only a few patients could be carried to safety before the fire spread rapidly through the building, preventing further rescue attempts. The rest of the patients perished in their beds. In the adjacent building the 13 male patients were led to safety.

In the meantime five tank trucks from Clearwater, Largo, and the Forest Service Fire Departments had responded to telephone alarms. However, the fire had spread so rapidly through the building that fire fighters could only concentrate on protecting exposures, which they did competently.

A complete report on this fire, by Chester I. Babcock, Manager, NFPA Fire Record Department, is contained in the April issue of the NFPA *Quarterly*.

Fighting Rural Fires

An Operational and Training Outline

THIS outline was prepared at a special conference held last year at the Madison Vocational School, Madison, Wisconsin, by a sub-committee of the NFPA Committee on Farm Fire Protection. The conference was headed by Emmett T. Cox of the Western Actuarial Bureau, Chicago. Other committee members included Norton T. Ames of Madison, Wisconsin; Warren Y. Kimball, Secretary, NFPA Farm Committee; Mark Brosier, Iowa State College; Arthur C. Page, *Prairie Farmer* magazine, Chicago; and Leonard C. Lund, Deputy Fire Marshal, Minnesota, Chairman of the NFPA Farm Committee. Participating in the conference were representatives of the United States Department of Agriculture, U. S. Federal Civil Defense Administration, and officers from several fire departments including Chief George W. Olsen from Black Earth, Wisconsin.

The purpose of the conference was to review the rural fire fighting problem from the point of view of country fire departments. It had been explained in various meetings that much of the information available to rural fire departments was primarily developed for use by city and town fire fighters and accordingly did not always adequately meet the needs of men fighting farm and rural fires.

At the Madison conference the entire problem was carefully reviewed. An outline was formulated covering all phases of rural fire fighting including preparations for response, receipt of alarms, fire fighting, water supplies, etc. This outline is arranged in the sequence in which these problems must usually be met in fighting a country fire. The outline has been designed so that it may be used as the basis of a local training program by any given rural fire department by simply filling in the outline with local procedures and practices considered best for that department.

The outline has already been made available on an experimental basis to the firemen training services of several states where rural fire department training is being carried out. It has been enthusiastically received. At the February 1953 meeting of the NFPA Committee on Firemen Training the endorsement of that Committee was given to the outline with the understanding that it would be published in FIREMEN. Accordingly, we present here the main features, although it is not possible in the space available to include all of the numerous details covered in the complete report.

The NFPA Fire Services Department, aided by members of the special subcommittee, has in preparation a text of a book on rural fire fighting based upon the outline. As a contribution to the very important work being done by thousands of rural fire departments in the United States and Canada various chapters and sections will be published from time to time in FIREMEN.

INTRODUCTION

0.1 Scope
- 0.11 Definition: "Farm and rural fire fighting for firemen."
- 0.12 Texts and references
  - 0.121 Constitution and by-laws
  - 0.122 Equipment
  - 0.123 Pumping
  - 0.124 Driving
  - 0.125 Sources of help available to local departments
- 0.13 Available fire service training manuals
- 0.14 Other texts and references
- 0.15 Organization
  - 0.151 Chain of command
  - 0.152 Emergency conditions involving state and federal intervention and assistance

0.2 Inspections of farms
- 0.21 Pre-fire planning
- 0.22 Numbering and identification of farms

0.3 Preparation for response
- 0.31 Marking firemen's cars (state laws and local practices)
- 0.32 Transportation of men
  - 0.321 On fire department equipment
  - 0.322 In private cars

0.4 Fire clothing
- 0.41 Clothing required and provided
- 0.42 Where and how carried and used

CHAPTER I — RESPONDING TO RURAL FIRE ALARMS

1.1 Receiving the Alarm
- 1.11 How transmitted?
- 1.12 Getting proper location
  - 0.121 Answering phone
  - 0.122 Posting location for other members

1.2 Alerting Firemen
- 1.21 Use of sirens
- 1.22 Use of bells
- 1.23 Signal horns
- 1.24 Telephones
- 1.25 Radio
- 1.26 Other methods

1.3 Turnout
- 1.31 Fire clothing
- 1.32 Where to report
- 1.33 Order of equipment response

1.4 Driving to Scene of Emergency
- 1.41 Heavy vehicles vs. passenger cars
- 1.42 Response routes
- 1.43 Cautions
  - 1.431 Other emergency vehicles
  - 1.432 Other traffic
  - 1.433 Driving hints

CHAPTER II — APPROACHING THE SCENE OF THE EMERGENCY

2.1 Radio Instructions Enroute
- 2.11 Further information from dispatcher regarding emergency
- 2.12 Information sent back to direct additional response

2.2 Size-Up
- 2.21 First view of the location
  - 2.211 The nature of the emergency
    - a. Life hazard or rescue problem (no fire)
    - b. Fire
      - (1) Structure involved
      - (2) Magnitude
      - (3) Life hazard in buildings involved
      - (4) Live stock removal and control

2.3 Your Own Situation
- 2.31 The equipment you have with you
- 2.32 Manpower on hand
- 2.33 What you can expect later

2.4 Your Decision
- 2.41 Can you handle the fire with what you have?
- 2.42 Do you need help?
  - 2.421 What kind? (be specific)
  - 2.422 How to call help
    - a. Radio
    - b. Telephone
    - c. Messenger

NOTE — You have arrived at the fire — now go into action. See book "Fire Fighting Tactics" by Lloyd Layman, published by NFPA, 1953. $3.75.

CHAPTER III — FIREMEN ARRIVING AHEAD OF EQUIPMENT

3.1 Policing Farm Lanes So Equipment Can Get In and Out

3.2 Rescue (see Chapter IV)
- 3.21 People
- 3.22 Livestock

3.3 Send Back Any Necessary Information

3.4 Spot Water Supply
- 3.41 Estimate supply
- 3.42 Distance to fire
- 3.43 Approach for pump
- 3.44 Depth of suction
  - 3.441 Clear out debris
  - 3.442 Cut through ice or remove snow

3.5 Locate Fire
- 3.51 Which building involved
- 3.52 Specific location of fire
  - 3.521 Room
  - 3.522 Floor
  - 3.523 Concealed spaces
  - 3.524 Is it extending seriously?

3.6 Isolate Fire
- 3.61 Close doors and windows that may limit spread of fire
- 3.62 Attack fire with hand hose or extinguishers at point most seriously threatening other fuel
- 3.63 Remove combustibles that may add to fire

CHAPTER IV — RESCUE

4.1 Human Lives
- 4.11 Inquire whether all occupants are accounted for
- 4.12 Make certain all occupants have been aroused
- 4.13 Restrain occupants from risking lives to save belongings (direct their efforts toward useful fire control measures)
- 4.14 Protect with hose streams until rescue can be effected
- 4.15 Remove persons from danger
- 4.16 Call rescue equipment, medical aid
- 4.17 Provide first aid
- 4.18 Arrange shelter or ambulance service

4.2 Livestock
- 4.21 Remove large animals to a secure enclosure away from fire
- 4.22 Close doors and windows to isolate fire
- 4.23 Protect stock with hose streams
- 4.24 Provide ventilation to prevent smoke casualties
- 4.25 Obtain veterinary service promptly

CHAPTER V — FIGHTING THE FIRE

5.1 Water Supply
- 5.11 Booster tanks — number and capacity
- 5.12 Tank trucks — number and capacity
- 5.13 Natural water supply
  - 5.131 Hydrants
    - a. Distance
    - b. Flow available
  - 5.132 Cistern
    - a. Distance
    - b. Capacity
    - c. Suction lift
  - 5.133 Creek or brook
    - a. Distance from fire
    - b. Distance from road
    - c. Depth of suction
    - d. Capacity
    - e. Pump approach available or use of portable pump?
  - 5.134 Pond
    - a. Distance from fire
    - b. Distance from road
    - c. Depth of suction
    - d. Pump approach available or use of portable pump?

NOTE — It is assumed that pump operators are trained in operation of pumps at draft and in supplying proper pressure for long lines. See NFPA Manual "Operating Fire Department Pumpers."

  - 5.135 Tankers and milk haulers
- 5.14 Application of water
  - 5.141 Effective rate of application to absorb and transfer heat
  - 5.142 Conservation of water
    - a. Proper size nozzle tips
    - b. Use of shut-off to conserve water
    - c. Use of fog or spray to obtain maximum cooling effect
    - d. Knowledge of nozzle discharge at various pump pressures.

5.2 Exposures
- 5.21 Need of protection
  - 5.211 Distance
  - 5.212 Wind direction and velocity
  - 5.213 Nature of combustibles
  - 5.214 Magnitude of exposure fire
- 5.22 Type of protection available
  - 5.221 Fog
    - a. Capacity and range of streams — 1-in., 1½-in., 2½-in.
    - b. Types of nozzles and fog patterns. (See "NFPA Fog Nozzle Studies," 1952)
  - 5.222 Foam
    - a. Capacity and type
    - b. Blanketing effect
  - 5.223 Heavy fog or solid streams
    - a. Selection of nozzles giving best streams for available flow
    - b. Placing of streams for best exposure protection.

5.3 Locating Main Body of Fire
- 5.31 Entry into fire building
  - 5.311 Size-up before entry
  - 5.312 Selecting point of entry
  - 5.313 Forcible entry if necessary
  - 5.314 Tools and equipment needed
- 5.32 Apparent direction of fire travel
  - 5.321 Is fire localized?
  - 5.322 Is fire extending rapidly?
  - 5.323 Estimate area involved in fire and volume of heat

5.4 Class of Fire
- 5.41 Ordinary combustibles requiring cooling
- 5.42 Flammable liquids fires
- 5.43 Fires involving electrical equipment

5.5 Phase of Fire
- 5.51 Phase one: Incipient fire
  - 5.511 Conditions
    - a. 21% oxygen content of atmosphere
    - b. Accelerating heat generation according to development of fire
    - c. Considerable smoke in reverse proportion to heat generation
    - d. Destruction limited to immediate fire area
  - 5.512 Requirements to extinguish
    - a. Entrance and direct application of extinguishing agent
    - b. Personal protection if needed
  - 5.513 Method of Extinguishment
    - a. Make entrance
    - b. Locate fire
    - d. Apply extinguishing agent

e. Use of masks
f. Ventilate at natural openings if needed

5.52 Phase two: Flame producing fire
5.521 Conditions
a. Major involvement
b. Entrance difficult because of heat
c. Oxygen reduction 21 to 15% or less
d. Rapid heat generation with highest temperature at ceiling
e. Travel of heated gases and air
f. Limited smoke production, increasing as flame decreases
g. Increasing atmospheric pressure within space
h. Rapid destruction
5.522 Requirements to extinguish
a. Reduction of room temperature
b. Entrance and direct application of extinguishing agent to remaining fire
c. Personal protection if needed
5.523 Method of extinguishment

NOTE — This will be the same procedure as in Phase Three.

5.53 Phase three: Smoldering fire (structure dangerously charged with heat and smoke)
5.531 Conditions
a. Oxygen below 15%
b. Convection ceased and stratification of temperatures, highest at upper levels
c. General decreasing of temperature due to lowering of heat generation and heat losses
d. Intense smoke production
e. Serious accumulation of carbon monoxide gas
f. Reduction of pressure of interior atmosphere
g. Chance for atmospheric interchange with exterior
h. Possibility of smoke explosion if air (oxygen) is admitted
5.532 Requirements to extinguish
a. Reduction of temperature
b. Displacement of smoke and gases with steam to make space livable and eliminate chance for smoke explosion
c. Entrance and direct application of extinguishing agent
d. Personal protection if needed
5.533 Method of extinguishment
a. Locate area of major involvement
b. Determine point or points at which application is to be made
c. Make opening, if needed, small as possible for the application of water fog
d. Assume position so that nozzlemen will not be involved with hot smoke and condensing steam
e. Apply fog into upper level to meet space requirements
(1) If at upper level — use "low velocity" fog
(2) If at lower level — use "high velocity" fog and direct into upper level
The order of expulsion due to displacement will be:
1. Smoke
2. Smoke and condensing steam
3. Condensing steam
f. Continue application of fog without interruption until decrease of condensing steam is noticed
g. Enter and extinguish remaining fire and spot fires
h. Protect self as necessary with breathing apparatus and heavy clothing

NOTE — See book "Attacking and Extinguishing Interior Fires," by Lloyd Layman, published by NFPA, 1952. $3.75.

5.6 Building or Structure Fully Involved. (Fire burning freely to outside.)
5.61 Point of attack
5.611 Wind direction
5.612 Exposures
5.62 Method of attack
5.621 Volume of water needed to absorb heat
5.622 Use of solid streams to provide adequate capacity and range
5.623 Use of large fog streams to absorb heat

NOTE — Many fog nozzles have relatively small discharge and range. Select nozzles with adequate flow and range pattern. Consult NFPA Fog Nozzle Studies.

5.63 Closing in
5.631 Aggressiveness
a. Spirit
5.632 Keep nozzle moving as necessary to absorb heat
5.633 Use care in movement of charged lines
5.64 Equipment
5.641 Pre-connected lines
5.642 Fog
5.643 Penetrants ("wet water")
5.644 Masks and breathing apparatus

5.7 Assigning Additional Aid
5.71 Own men arriving later
5.711 Additional lines
5.712 Salvage
5.713 Relief of fatigued members (Use of oxygen)
5.714 Fire-police
5.72 Other companies. (Assign men to meet them with specific directions)
5.721 Pumper relays or completing hose lays
5.722 Refilling of empty tankers
5.723 Additional lines
5.724 Protection of exposures
5.725 Chasing spot fires caused by brands
5.726 Covering vacated fire station
5.73 Local people
5.731 Transportation of water
5.732 Assisting in evacuation of endangered persons and livestock
5.733 Removal of valuable contents to safety when necessary

NOTE — There is a tendency at country fires for neighbors to rush in and remove everything from the building, often increasing the damage and interfering with fire fighting. Where the fire will be controlled this should be discouraged.

5.74 Other agencies — Cooperation with:
5.741 Police and sheriff's forces
5.742 Public service agencies
5.743 Utilities
5.75 Salvage
5.751 Farm machinery
5.752 Electrical equipment
5.753 Feeds
5.754 Grain
5.755 Household goods

CHAPTER VI — RESTORATION OF FARM OPERATIONS

6.1 What the Fire Department Should Do

6.2 What the Farmer Should Do

6.3 Protection of Property After the Fire Has Been Controlled

CHAPTER VII — GETTING FIRE EQUIPMENT BACK IN SERVICE

7.1 The Importance
7.11 Subsequent calls may be received
7.12 Community protection is reduced when equipment is out of service

7.2 Proper Techniques
7.21 Refilling tanks
7.22 Changing and caring for hose
7.23 Refueling apparatus and power equipment
7.24 Washing and cleaning apparatus and equipment

7.3 Records
- 7.31 Roll call, personnel present (Record any injuries)
- 7.32 Record equipment used
  - 7.321 Any damage to equipment
  - 7.322 Any replacements needed
- 7.33 Record of fire
  - 7.331 Report required for fire marshal or insurance commissioner
  - 7.332 Records and sketches for company record and study
    - a. Notes and photos that might be available. Have pictures taken if needed.
  - 7.333 Story for press

CHAPTER VIII — EMERGENCY SITUATIONS

8.1 Abnormal Weather. (Blizzards or sleet storms, hurricanes or tornados, etc.)
- 8.11 Road conditions
- 8.12 Communication interrupted
- 8.13 Water supplies difficult to reach

8.2 No Organized Department in Attendance. (Discussion of what can be done at rural fires when no organized fire department is able to reach the scene.)

8.3 Defense Phases. (Under wartime or other declared emergencies local fire forces might be re-assigned in accordance with defense plans, requiring a move up of suburban companies to protect defense centers and coverage of greater territories by rural departments which might also be asked to furnish manpower for fire defense. These defense situations may be handled on the following levels:)
- 8.31 County defense and mutual aid programs
- 8.32 State-wide emergencies
- 8.33 Emergencies involving Federal government

CHAPTER IX — REVIEW OF BASIC TRAINING

9.1 Identification of Tools Used in Fire Fighting

9.2 Handling and Using Hose

9.3 Using Hand Extinguishers

9.4 Handling Ladders

9.5 Using Salvage Covers

9.6 Wearing and Using Protective Equipment
- 9.61 Fire clothing
- 9.62 Masks and breathing apparatus

CHAPTER X — EQUIPMENT USED IN FIGHTING RURAL FIRES

10.1 Apparatus
- 10.11 Rural pumpers
  - 10.111 Standards for rural pumpers
  - 10.112 Operating rural pumpers
- 10.12 Tank trucks
  - 10.121 Standards for rural tankers
  - 10.122 Operations using tankers
- 10.13 Squad and emergency vehicles

10.2 Equipment and Appliances
- 10.21 Radio
- 10.22 Masks
- 10.23 Portable pumps
  - 10.231 Types
  - 10.232 Possible operations
    - a. Direct streams
    - b. Relays to pumpers
    - c. Hydrant boosters

10.3 Fog Equipment
- 10.31 Low pressure (up to 250 lbs.)
- 10.32 High pressure (up to 800 lbs.)

10.4 Proportioners and Wetting Agents
- 10.41 Types
- 10.42 Uses

10.5 Electrical Equipment
- 10.51 Types of generators
  - a. Alternators
  - b. Large generators
- 10.52 Flood lights
- 10.53 Power tools

10.6 Foam Equipment
- 10.61 Types of foam
- 10.62 Generators
- 10.63 Proportioners

10.7 Salvaging Equipment
- 10.71 Salvage covers
- 10.72 Other salvage equipment

CHAPTER XI — WATER SUPPLIES

11.1 Public Water Supplies
- 11.11 Source and water storage
- 11.12 Distribution system
  - 11.121 Gridironed or looped mains
  - 11.122 Dead-end mains
- 11.13 Hydrants
  - 11.131 Type
  - 11.132 Flow

11.2 Private Water Supplies
- 11.21 Source and water storage — Type of pump — Source of power
- 11.22 Outlets useful for fire service
- 11.23 Capacity or flow

11.3 Natural Water Supplies
- 11.31 Brooks or other streams
- 11.32 Ponds, lakes, or other natural bodies of water
- 11.33 Stock ponds or man-made reservoirs

11.4 Tank Trucks
- 11.41 Fire department equipment
  - 11.411 Number and type
  - 11.412 Capacity

11.5 Other available trucks (Oil and milk trucks, etc.)
- 11.51 Number and type
- 11.52 Capacity

CHAPTER XII — RURAL FIRES OTHER THAN FARM BUILDINGS

12.1 Grass, Brush, Prairie, Woods
- 12.11 Methods of control
- 12.12 Equipment needed

12.2 Tank Trucks and Vehicles on Highways
- 12.21 Type of vehicle and fuel involved
- 12.22 Methods of control for class of fire
- 12.23 Equipment needed or suitable

12.3 Grain Elevators
- 12.31 Location and construction
- 12.32 Location and extent of fire
- 12.33 Methods of control and extinguishment

12.4 Other Rural Structures
- 12.41 Schools
- 12.42 Churches
- 12.43 Rural industries
- 12.44 Airplane hangars, bridges, trestles, etc.

CHAPTER XIII — LEARNING BY DOING

13.1 Study of Actual Rural Fires
- 13.11 Examples from FIREMEN magazine and other fire publications
- 13.12 Study from local experience
- 13.13 Lectures and reports by experienced fire officers

CHAPTER XIV — RURAL FIRE PREVENTION ACTIVITIES

14.1 The Need
- 14.11 Time element
  - 14.111 Seasonal hazards
- 14.12 Water supply
  - 14.121 Community programs
    - a. Agencies that may help
    - b. Possible types of supply
  - 14.122 Local farm programs
    - a. Possible types of supply
- 14.13 Values of buildings and property needing protection

14.2 Fire Prevention Hints

14.3 Sources of Fire Prevention Materials and Information

14.4 Who Can Help?
- 14.41 Fire district
- 14.42 Other governmental units
- 14.43 Churches
- 14.44 Schools
- 14.45 Extension service
- 14.46 Other agencies

14.5 Public Relations
- 14.51 Methods of getting acquainted with the farmer

Preventive Maintenance for Aerial Ladders

From an address by G. R. Layden, Chief Engineer, Peter Pirsch & Sons Company, given at the 25th Fire Department Instructors Conference, Memphis, Tennessee

Part II — Conclusion

TEMPERATURE changes have relatively little effect on metal ladders. For instance, although we limit wood ladder tests to 40 degrees F. minimum, the metal aerials can be tested at much lower temperatures. In our aluminum alloy ladders, we have conducted field tests as low as 20 degrees F. below zero. The ladder could be tested in any temperature that men can stand between the hottest and coldest extremes. Under laboratory conditions aluminum alloys have tested satisfactorily without showing any loss of strength or evidence of brittleness of temperatures as low as 300 degrees F. below zero. In the high temperature ranges, the ladder will stand considerably more than the man testing the ladder and much hotter temperatures than any wood ladder. Therefore, we suggest you pick the temperature to suit your own comfort and convenience when testing metal ladders.

Wind conditions are important in aerial ladder tests because of the possible dynamic loading effect caused by the wind. Any strong wind causing the load to swing or bounce in a pendulum effect will add an indeterminate amount to the loading and will not only be dangerous but also inaccurate since actual load is not known. Testing equipment to be used should be the same as for the wood ladder. (April, 1953, FIREMEN.)

The testing procedure should be in accordance with the manufacturer's recommendations but the following general suggestions should apply to all types.

1. Gather your equipment. Do not improvise but have correct material on hand.
2. Place the aerial ladder truck on level ground.
3. All stabilizers should be in place.
4. Load the ladder according to the manufacturer's suggested procedure. During this test careful watch should be kept to see that the aerial ladder rails remain square and parallel. Any evidence of twist should be sufficient cause to discontinue the loading.
5. Ability to recover from load is just as essential in metal ladders as it is in wood ladders and is the main factor in determining the safety of the ladder.

WITH specific reference to our own experience in metal aerial ladders we would like to offer the following comments.

1. A careful visual check should be made and recorded monthly as a part of standard routine.
2. Examine carefully any protective coating or finish used and record any bad spots.
3. Examine carefully for cleanliness. For instance, if an unusual amount of sand or grit has accumulated in the slides or rollers or guides, they should be cleaned before damage is done. Record such information.
4. Examine all rungs carefully. Make sure they are tight and secure. Check the rivets or welds carefully. We would like to suggest to the users of our aluminum alloy aerial ladders that they stock a few aluminum rivets so that quick repairs can be made when rungs are damaged. These rivets are inexpensive. They can be stored indefinitely without damage and with no deterioration. They are driven cold with easily available tools and immediate repairs are much more satisfactory than delayed repairs while awaiting parts.
5. Examine the cables carefully for any evidence of fraying, tearing or gouging. Cable should be replaced immediately when this occurs. Cable life will be increased by following manufacturer's recommendation on lubrication. Record this data including the number of times it is lubricated and inspected as well as repairs or replacement.
6. Examine the structural members of the ladder for kinks, gouges or any mis-shapement. Remember that the ladder is only as strong as the weakest point and as soon as a kink appears the ladder immediately has a weak point. Remember that the ability of the ladder to recover its original shape is the first determination of safety and obviously a kink can never recover. Some gouges can be smoothed off without damage. Record any such evidence.
7. All sheaves, guides, rollers and brackets should be secure and all moving parts lubricated regularly. When the truck chassis is greased, the aerial ladder should be checked for lubrication. Keep an accurate record.

IN CONNECTION with these general recommendations the subject of cleanliness cannot be overemphasized. Good maintenance goes hand in hand with cleanliness. On aluminum alloy ladders the methods of cleaning seem to have many varied opinions, but actually there are several very satisfactory methods.

Where the natural metallic lustre of aluminum is exposed to weathering, cleaning operations should be kept on a regular schedule since accumulation of soot, grease and grit from the surrounding air will not only destroy the appearance but will also cause wear in moving parts or surfaces. If the metal surface has not been kept clean over a period of 2–3 years and is generally blackened from weathering we suggest the following:

1. Wash thoroughly with a solvent cleaner, preferably a volatile cleaner so that it will not become entrapped in cracks. Rinse in clean water.
2. Clean with good quality abrasive soap.
3. Sponge off with clean water.
4. Wet surface with solution of one part phosphoric acid to three parts water allowing the solution to stay in contact about 5 minutes.
5. Wipe down with clean cool water and blow out crevices.
6. Wipe down with cheese cloth pads moistened in equal parts of de-natured alcohol and water and allow to dry.

This should bring surface back to nearly its original lustre. On the larger exposed surfaces if not cleaned

regularly it is desirable to spray two coats of lacquer which will allow longer time intervals between cleaning without showing weathering.

If cleaned regularly, the aluminum surface can be kept clean with any volatile grease cutting cleaner or any good soap or any good household abrasive cleaner. When abrasives are used, application should be with reciprocative motion rather than rotary motion.

If slightly harsher methods are required, the use of No. 00 steel wool with a suitable lubricant is advisable. Water, light oils and liquid waxes can be used as the lubricant. In using steel wool pads, always make sure they are clean as grime build-up tends to mark up the surface. This is the reason that power buffers are discouraged.

POWER operated aerial ladder hoists are classified in three general classifications. All of them use a combination of hydraulic and mechanical power. All three types take their motive power from the unit power plant of the truck through a power take-off which is a mechanical operation through a train of gears.

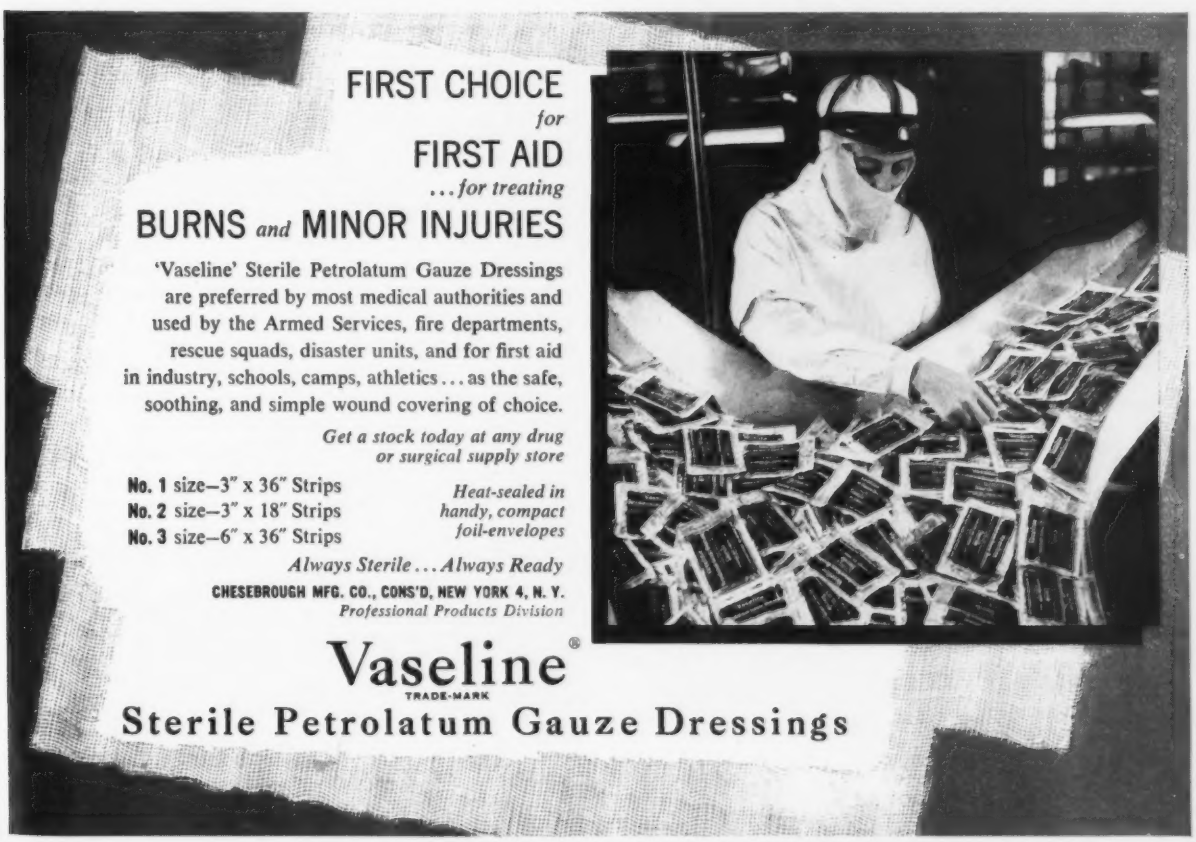
In one type in use, which is some times referred to as a hydraulic hoist, the power take-off operates a hydraulic pump which pumps fluid to cylinders for the elevating mechanism and pumps fluid to hydraulic motors for the turntable and fly ladder operation. These operations are hydraulic. The hydraulic motors operate gears which either turn the table or the fly ladder winch. These operations are mechanical.

The second type generally termed a hydraulic hoist is similar to the first type except in operation of extending and retracting fly ladders. In this second type the fly ladders are extended by mounting a hydraulic cylinder on the aerial ladder and for this operation they utilize hydraulic power through a flexible connection from the table. This eliminates one set of gears used in the first type, but adds several sheaves and extra cable in the climbing valley of the ladder. Also in this second type the pump is mounted on the aerial turntable which has a mechanical drive from the power take-off to the center of the table. The operation of the cylinders and revolution of the table is similar to the first type.

The third type which is termed hydro-mechanical uses hydraulic power for operating the cylinders and mechanical power for the turntable and fly ladder extension.

THE main point of these comments is that all types of ladders having moving and wearing parts in both mechanical and hydraulic design. Many cities have more than one type in service which requires different techniques and service programs but these differences are not radical insofar as maintenance procedures are concerned.

Be sure and put any of these types on a chronological schedule of service checking and carefully record all data as these checks are made. Many times the user acquires better service background material than the original manufacturer and such data may prove as valuable to the manufacturer as to the user. In any event, with regular service procedure checks you will be able to segregate constant and chronic troubles from the exceptional or infrequent troubles that might occur.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Winners of the 3rd Fire Foto of the Year Contest

ON these pages are the winning pictures of the 3rd Annual Fire Foto of the Year Contest. Sponsored by the National Fire Protection Association and the National Press Photographers Association, the contest is open to all press photographers in the United States and Canada. Entries must represent some fire scene and are judged on a point system devised by the National Press Photographers Association.

This year's first prize was won by Herb Carleton of the Van Nuys, California, *News*. His picture "Panic" was taken at the instant when the world's largest sound stage collapsed at the Warner Brothers motion picture studio, May 16, 1952. (See July, 1952, FIREMEN.) Carleton had to drive through a three-mile traffic snarl to get to the scene of the fire. Describing his feelings at the blaze, he stated, "I knew the giant sound stage would collapse. When I heard a loud cracking sound I ran to where I thought I could get the best shooting angle. When I saw workers running towards me and the stage collapsing I shot the picture and ran like heck myself to get out of the way of falling debris."

Jim Moore, district reporter-photographer for the Portland, Maine, *Press-Herald*, won second prize for his photo of the Rockland, Maine, fire. (See February, 1952, FIREMEN.) He took the picture under extremely difficult conditions.

Said Moore: "I was home, two miles away, in bed with grippe when word of the fire came. Over objections of my wife I threw clothes over my pajamas and grabbed a nearly nondescript camera. The lens hadn't even been adjusted for infinity and the only way I had of making a focus was by ground glass while using a paper clip to hold the shutter open. I had two "headaches," one from the grippe, and the other photographically, because of a 40-mile-an-hour wind and driving rain. I had to brace the camera against the hood of a parked car. Using a flash was out of the question so I took the picture in a little less than 1/25th of a second at f4 and it was rushed in relays to Portland, 85 miles away."

The unusual picture of a man and his son watching a huge fire roar through a 150-acre wheat field won third prize in the Contest for Bill Peery, photographer of the *Rocky Mountain News*, Denver, Colorado.

1st Prize - $250 **"Panic" -- by Herb Carleton, photographer of the Van Nuys, California, *News*, during the fire that involved the Warner Brothers Studio, Hollywood, California, May 16, 1952.**

2nd Prize - $75 **"Fire in the Night" -- by Jim Moore, district reporter-photographer for the Portland, Maine, *Press-Herald*, during the conflagration at Rockland, Maine, December 12, 1952.**

3rd Prize - $50 **(Below) "Fire Fans" -- by Bill Peery, photographer of the *Rocky Mountain News*, Denver, Colorado, during a fire which involved a 150-acre wheat field.**

Honorable Mention **(Below) "Over the Top" -- by Bud Kamenish, Louisville, Kentucky, *Courier-Journal*, during Kentucky State Fair fire in September, 1952.**

Honorable Mention

"Death of a Giant" -- by Bob Bain, Fort Worth, Texas, *Star Telegram*, when fire involved a B-36 plane at the Carswell Air Base.

Peery is a frequent national photography winner and won honorable mention in the Second Fire Foto of the Year Contest.

Honorable Mention awards went to Bob Bain, of the Fort Worth, Texas, *Star-Telegram*, for his picture of Carswell air base fire fighters coping with a blazing B-36; and to Bud Kamenish, of the Louisville, Kentucky, *Courier-Journal*, for his picture of a fire at the Kentucky State Fair. (See November, 1952, FIREMEN.)

Judges for the 3rd Annual Fire Foto of the Year Contest were: Harold Blumenfeld, Newspictures Editor, United Press Association; Joseph Costa, King Features, and Chairman of the Board of the National Press Photographers Association; William C. Eckenberg, *New York Times;* Melvin R. Freeman, NFPA Public Relations Manager; and Norris Harkness, President of the Photographic Society of America.

Entries are now being accepted for the Fourth Fire Foto of the Year Contest. NFPA member fire departments should encourage press photographers in their communities to enter the Contest since the prizes and prestige attained by the winners are worthwhile. In addition to the prizes attractive certificates will be awarded to the winners and their employers.

THE BOOTS THAT HELP FIGHT FIRES

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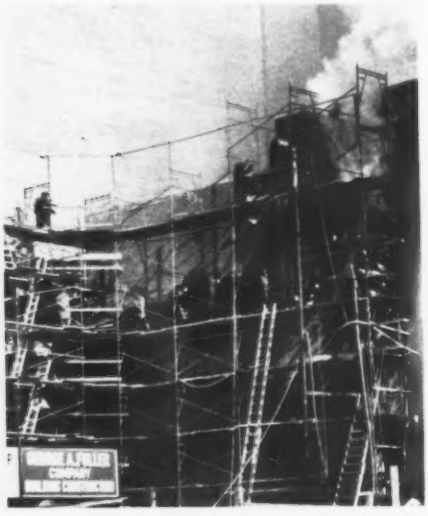
Business block, New Marshfield, Ohio, March 21. (*Athens Messenger Photo.*) An estimated $150,000 loss resulted when fire started in a hardware store and rapidly involved 2 adjacent stores, a garage, a dwelling and 2 barns. Because of inadequate water supply fire fighters had to employ bucket brigades to fill booster tanks from milk trucks serving as water carriers.

Strand Hotel, Atlantic City, New Jersey, March 30. (*United Press Photo.*) When fire involved this 7-story hotel four elderly persons on the top floor were rescued by ladders during 50 mph winds.

Fires in the News



Brewery, Newark, New Jersey, March 11. (*United Press Photo.*) Thirteen men were suffocated and 31 others suffered smoke poisoning or injury when fire involved cork insulation in this 6-story brick building. Victims were trapped in fermentation tanks at upper levels when smoke was carried into tanks by building ventilation system.

Hotel, Old Town, Maine, March 2. Fire started in this unsprinklered 4-story wooden hotel and extended to two adjoining unsprinklered wooden buildings. Further spread to other close exposures was checked by manually controlled and automatic outside sprinklers, and inside sprinklers in one of the buildings. Loss was estimated at $250,000.

Warehouse, Moncton, New Brunswick, March 11. Fire fighters encountered a fully involved building despite immediate response to a fire alarm for this frame warehouse. Close exposures were protected successfully during nine hours of fire fighting but the unpartitioned wood building and combustible contents were destroyed. Estimated loss was in the vicinity of $500,000.

Woodworking buildings, Watervliet, New York, March 11. An estimated loss of $100,000 resulted when fire destroyed several 1- and 2-story sprinklered brick, wood joisted buildings. The fire started in grass and spread to a lumber shed. Fire fighters used 12 hose streams but flames spread over combustible roofs out of range of sprinkler discharge.

Chief Fields Heads Omaha Fire Department

BATTALION Chief Eugene W. Fields has been named Chief of the Omaha, Nebraska, Fire Department, replacing Chief Clyde Dunn who has retired after 45 years of service.

Chief Fields joined the Department in 1932, was promoted to Junior Captain in 1941, and to Senior Captain in 1942. He served with the Navy as a fire fighting officer during World War II and was with the 7th fleet in the Pacific.

In 1947 he was promoted to Battalion Chief in charge of first aid and rescue work of the Omaha Fire Department. In July, 1951, he was loaned to the Federal Civil Defense Agency where he served as Chief of Training, Fire and Rescue Division until he was called back to Omaha to head the Department.

Bus Ride to FDIC

A CHARTERED bus to the Fire Department Instructors Conference in Memphis, Tennessee, meant considerable savings to Michigan fire fighters. NFPA member Earl E. Hotchin, Secretary-Treasurer, Mill Mutuals Agency, of Lansing, Michigan, reports that the fare of the 1400-mile round trip cost only $27 for each of the 29 fire chiefs, inspectors, instructors and other fire fighters who travelled from Michigan to the FDIC. M. D. Whale, Chairman of the Michigan State Fire College arranged for the bus trip and room reservations. According to reports the bus ride not only was a reasonable means of transportation but also provided opportunity for those who participated to get acquainted informally with other fire fighters from their own state. The resultant "bull sessions" were reported profitable and enjoyable.

METHODS OF ARTIFICIAL RESPIRATION

by Dr. William S. Claudy

A 16-page reprint of the series on artificial respiration which recently appeared in FIREMEN

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Industrial Fire Protection

Trona Fire Department of American Potash and Chemical Corporation

Apparatus and fire station of the Trona Fire Department. Pumper at left is now out of service. New pumper is in center.

HEADED by Chief Rex Lascoe (NFPA member) the Trona Fire Department protects the 40 million dollar chemical plant of the American Potash and Chemical Corporation in Trona, California. The department is also responsible for protecting four towns including 453 dwellings which house plant personnel, a business district, and a 3½-million dollar high school.

Chief Lascoe retired as Battalion Chief after 23 years of service with the Los Angeles Fire Department, then was appointed to his present position in 1951. Other members of the department include an Assistant Chief and 20 volunteer fire fighters.

The department has a modern fire station housing two triple combination pumpers. One of these is a 750-gpm Hale 2-stage pump mounted on a 1952 GMC chassis, also equipped with a 4-stage centrifugal high pressure pump. The truck has a 600 gallon water tank and is equipped with 1500 ft. of 2½-in. hose, 300 ft. of 1½-in. hose, two 100-ft. booster lines, ladders, a resuscitator, a three-way deluge monitor and other equipment.

The other truck has a 500 gpm pump mounted on a 1924 Stutz chassis, with a 500 gal. water tank, two 300-ft. reels of booster hose, 500 ft. of 2½-in. hose, breathing apparatus and other equipment.

A Gamewell fire alarm system and a telephone system with 24-hour supervision are used in the plant and town areas for fire notification. When an alarm is transmitted an air whistle signals the box number at which time a 1500 gpm electric fire pump is put into operation. A 6-cylinder 1500 gpm Waukesha Dayton Dowd pump is used in stand-by capacity in case electricity fails. The plant area has a 1½-million gallon water supply. Twenty pounds pressure is maintained on the looped 6-in. mains throughout the plant and town areas. Pressure is increased to 120 pounds in the system when fire occurs.

Fire fighters of the department are trained twice a month and inspect all buildings in the plant and town areas each week. During Fire Prevention Week demonstrations are given for the public in structural and oil fire fighting.

Trona fire fighters using high pressure fog on an oil tank fire during a night training session.

NFPA Gases Engineer

NEWEST member of the NFPA Staff is Clark F. Jones (above), who is now serving as Gases Field Engineer. In that position he is acting as Secretary of the NFPA Committee on Gases, to promote the better understanding and use of the standards developed by the Committee. Mr. Jones is a member of the Society of Fire Protection Engineers. He received his education at Rensselaer Polytechnic Institute at Troy, New York, where he graduated in 1930. After some utility experience he was employed in fire protection work with the Eastern Inspection Bureau. Before coming to the NFPA Staff he was District Fire Prevention Engineer for the 4th Naval District.

Watch That Lift Truck!

BECAUSE of their rugged appearance, lift trucks, and other mechanical handling equipment, are sometimes subjected to abusive operation by untrained or careless drivers. In some cases this disregard of safe practices has led to severe fire losses.

One such instance happened in a cotton warehouse recently where bale storage was being rearranged. A lift truck collided with a bale or a tiered stack. The collision pushed the side panel of the motor hood against the storage battery causing a short circuit. Arcing then caused ignition of cotton nearby and a flash fire resulted which opened 11 sprinkler heads. Before the employees and other fire fighters could extinguish the fire 102 bales of cotton were damaged and many other bales subjected to wetting.

Further illustrations may be found in "Fire Record of Industrial Tractors and Lift Trucks," a 4-page report published last year by the NFPA. It may be obtained for $1.00 per copy.

Waterous-equipped trucks built by the Boardman Company for Oklahoma City's Fire Department

8 MORE WATEROUS EQUIPPED PUMPERS FOR OKLAHOMA CITY

The Model CA-1 centrifugal pump chosen by Oklahoma City in its modernization program is a compact, rugged pump noted for its dependability and ease of operation.

Its balanced bronze impeller runs in renewable bronze wear rings. The shaft is stainless steel, and oil-lubricated ball bearings are used throughout. Pump shaft bearings are protected from water by oil-seal, flinger and packing.

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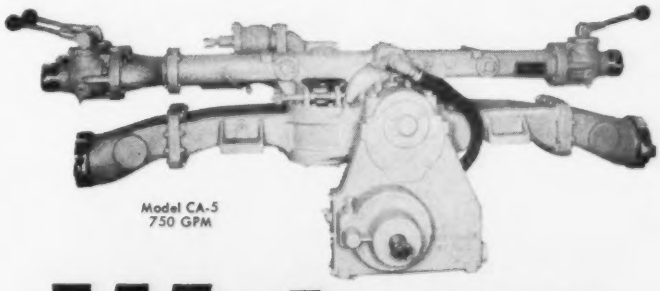
There are now 11 WATEROUS Fire Pumps on the job in Oklahoma City . . . helping that city build a reputation for having one of the most modern and efficient fire fighting organizations in the Southwest.

"Preferred Fire Pump Specifications" is a handy guide prepared to help you in specifying fire pumps for your city. For free copies, write WATEROUS COMPANY, St. Paul 1, Minnesota.



Model CA-5
750 GPM

Waterous

DEPENDABLE PUMPS

SINCE 1886

St. Louis Ladder Crew Makes Good Catch

From a story submitted by Captain Thomas L. Godfrey, Instructor, St. Louis Fire Department Training School.

FIRE fighters handling life nets expect to catch safely persons dropping from heights of 35 or 40 feet. As the height becomes greater the danger of injury or death to the falling person increases, and an alert and well-trained crew is essential for a safe catch. For example, when a man weighing 170 pounds falls 60 feet into a life net he lands in about 1½ seconds with a force approximately 5 tons. Particular care should be exercised by the net-holders to flex their arms so that their elbows will not be driven into their ribs when the body lands.

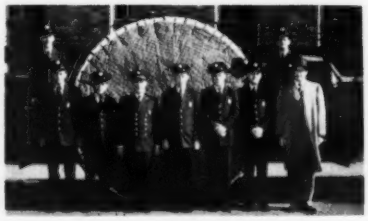
The picture at left shows members of Hook and Ladder Company No. 8, of the St. Louis, Missouri, Fire Department, maneuvering with a life net to meet such a situation.

On January 23 the Company received a telephone call from Deputy Chief J. Sauerwein who requested a ladder truck to proceed to a hotel in the city without using a siren. A man who was temporarily deranged had locked himself in a room on the 6th floor of the hotel.

When the ladder truck arrived, Deputy Chief Sauerwein ordered the aerial raised. However, by this time, the deranged man was on the window sill, threatening to jump. He also bombarded the crew with table and floor lamps, bureau drawers and other objects. The 6-man ladder crew, Chief Sauerwein, a newspaper reporter, and a police officer barely had time to grab the life net when the 170-pound man dropped. The crew with the net moved about two feet and made a successful catch. The man suffered serious injury to his back but was still conscious and resisting when taken to a hospital.

Life nets have been used successfully to catch persons dropping from greater heights than in this incident. The crew of Ladder No. 8, however, showed good coordination in performing this job despite handicaps. A local chapter of the American Legion awarded the crew a plaque in appreciation of its work.

(Photo at left by Staff Photographer Linck, St. Louis Post-Dispatch.)



Crew of Ladder No. 8

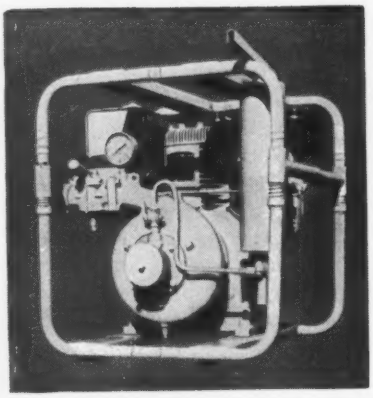
Front (left to right): Acting Captain Edward Siebels, Private Charles Mueller, Deputy Chief J. Sauerwein, Privates John Dewein, Edward Wroblewski, Private Harold Schlude, Special Police Officer Edward Roth. Standing on truck: (left) Private William Muehleisen; (right) Private Alfred Hofstetter, Chief's Aide. *(Photo by George B. Beaumont, Official Photographer, St. Louis Fire Department.)*

Fight Brush Fires From Moving Truck with a HALE Type FZZ PORTABLE PUMPING UNIT

Picture below shows fire-fighter handling stream from a Hale Type FZZ Portable Pumping Unit mounted on a moving truck. An FZZ can be mounted permanently on truck or carried as a portable unit for pumping into or *from* booster tank. This portable arrangement is extremely useful both for fighting brush, field or forest fires while in motion; or pumping from pond, stream or well direct.

An FZZ will supply from draft, 60 U. S. Gallons per minute at 90 lbs. pump pressure and up to 150 U. S. Gallons per minute at 30 lbs. It can supply two capable fire streams through 1½" hose lines using nozzle tips up to ½".

A frame-mounted FZZ (with carrying handles turned in) is pictured at right. Unit is also available mounted on two wheels or on rubber-cushioned steel channels.



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Nip Brush Fires in the Bud with a HALE FZZ

A Big Little Fire Department

From an address by Chief Charles T. Reveley, Stephens, Arkansas, Fire Department, given at the Fire Department Instructors' Conference, at Memphis, Tennessee, February 25.

Part II — Conclusion

THE big test for our fire department occurred in October, 1952, when the forest fires of Southwest Arkansas raged out of control of the forestry service. In fifteen days our department spent 75 hours protecting rural property including churches, homes, barns and highway bridges. During this period our department answered four alarms within our city totaling eight hours of fire fighting. Bear in mind that not one member of our department is paid. Every member either has his own business or is working at some job.

During this time we also answered seventeen calls for help, some as far away as 21 miles. We were successful in saving three churches, one combination school and church, seventeen farm houses and five county highway bridges. In addition to this we were instrumental in saving a great number of oil wells and tank batteries, as part of the worst fire was in the midst of one of the largest oil fields in our area.

THE job of protecting rural property and at the same time giving our city the proper fire protection was immense. One of the problems was water supply. One member of our department had a mill truck mounted with a 500-gallon tank which we pressed into service. Another citizen of our town owned a 1500-gallon oil transport which he cleaned and turned over to us for use. It was equipped with a small rotary pump for unloading oil. This we equipped with a line of 1½-in. hose and used for hauling water and for fire fighting. The Junior Firemen we had organized and trained for the past three years also proved their worth.

Since none of our equipment has radio, the Arkansas Power & Light Company agreed to let one of their radio-equipped trucks go out when we answered a rural alarm and another to stay in the city at our station. When we needed water, more men, relief men, or food during a fire we would radio to town. The food was furnished by our wives who are an active auxiliary.

(At left) Members of the Stephens, Arkansas, Volunteer Fire Department. Chief Reveley is third from the left in the front row.

(Below) Volunteer fire fighters engage an oil pit fire during a night training session.

ON FEBRUARY 1st at 10:58 A.M., we were called by the Cotton Belt Railroad because one of their freight trains had derailed, piled up 27 cars of freight and caught fire. This was about five miles from Stephens and the closest point we could get to the wreck was about one-quarter of a mile where a country road crossed the railroad tracks.

Here we got our truck across and astride the rails and drove it to the wreck and on one side of a bridge across a creek. The 27 cars were piled up as many as four deep within less than 300 feet.

Since the water in the creek was too far away to draft, we sent for a pump, built a dam, and pumped the water into our booster tank. From that we supplied our two lines into the fire.

The wreck was on the main line, but there was a siding that the railroad could use to get their trains over and not interrupt their service providing we could keep the wreck cooled down to a point of safety and prevent any of the passing cars from catching fire. In order to render this service, we placed the men of our department to working in six-hour shifts. We remained on the job from Sunday morning at 11:00 A.M. until Tuesday at 5:00 P.M.

The value of answering this alarm was not only in that we felt we had fulfilled an obligation but the renumeration from this job will enable us to purchase two Scott Air Packs we have been wanting for a long time. We also were presented with lights on adjustable standards to be used with our portable light plant.

Through such donations we have secured equipment valued at over $30,000 for our fire department, yet the citizens of our city have only paid out $8,000 for the original bond issue. In addition we have a station that could not be replaced today for less than $12,000 and an alarm system worth $1,000.

We maintain in our "kitty" or department treasury approximately $1,500 in order to help out in case one or more of our men get hurt. This will help in addition to their insurance and pension and relief fund payments. The personnel now consists of 14 of the original 17 men. The more we all work, train and study, the more we realize we have no stopping place but must continually study and train to remain an effective fire department.

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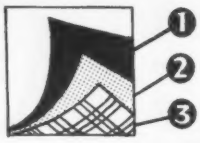

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Dates to Remember

Alabama: The 17th Annual Alabama State Fire School will be held at University, May 11–15.

California: The California Technical Institute of Fire Training will be held at Sacramento, Oakland, Fresno, Los Angeles, and San Diego May 1 to July 1. Write to Thomas S. Ward, Supervisor of Fire Training, State Department of Education, Sacramento 14, California.

Colorado: The Annual Colorado Convention and Fire School will be held in Pueblo, June 17–20. Write to Deputy Chief Arthur J. Becker, Denver Fire Department, Denver, Colorado.

Connecticut: The 12th Annual Connecticut Fire College will be held at the New Haven Fire Department School, May 18–23. Write to Director L. W. Eddy, Supervisor, Service Training, State Department of Education, 490 Capitol Avenue, Hartford, Connecticut.

Delaware: A short course for firemen will be held at Dover, July 21–24. Write to Director A. B. Anderson, Assistant State Director for Vocational Education, 511 W. 8th Street, Wilmington.

Florida: The Florida State Fire College will be held in four sessions at Ocala, May 11, June 12, July 20, and August 21. Information may be obtained from W. H. Barnett, Superintendant, P.O. Box 785, Ocala, Florida.

Illinois: The 29th Annual Fire College will be held at the University of Illinois, Champaign-Urbana, June 15–18. Write to Prof. G. W. Harper, 226 Mechanical Engineering Building, University of Illinois, Urbana, Illinois.

Indiana: The 20th Annual Indiana State Fire School will be held at Purdue University, Lafayette, May 18–21. Write to Prof. J. L. Lingo, Director, Indiana Fire Service Training Schools, Purdue University, Lafayette, Indiana.

Iowa: The 29th Annual Iowa State Fire School will be held at Iowa State College, Ames, May 18–21. Write to Director Mark Brosier, Supervisor, Engineering Extension Service, Iowa State College, Ames, Iowa.

Kansas: The 24th Annual Kansas State Fire School will be held at the University of Kansas, Hutchinson, October 20–23. Write to Gerald Pearson, Director, Extension Classes, 111 Fraser Hall, University of Kansas, Lawrence, Kansas.

Kentucky: The Kentucky State Fire School will be held at the University of Kentucky, Lexington, June 9–11. Write to J. L. Thompson, Assistant Manager, Kentucky Inspection Bureau, 940 Starks Building, Louisville, Kentucky.

Maryland: The 20th Annual Short Course for Firemen will be held at the University of Maryland, College Park, Sep-

tember 8–11. Write to Robert C. Byrus, Director, Fire Service Extension, University of Maryland, Box 85, College Park, Maryland.

Michigan: The Michigan State Fire College will be held at the University of Michigan, Ann Arbor, June 23–26. Write to M. D. Whale, Supervisor, Public Service Training, Box 928, Lansing, Michigan.

Mississippi: The Mississippi State Fire School will be held at State College, June 22 27.

Missouri: The Missouri State Fire School will be held at the University of Missouri, Columbia, July 27–30. Write to J. I. Fetters, Adult Education and Extension Service, University of Missouri, 23 Jesse Hall, Columbia, Missouri.

New Mexico: The Annual New Mexico Fire School and Convention will be held at Raton, June 6–8. Write to Chief F. E. Boren, P.O. Box 286, Silver City, New Mexico.

North Dakota: A Teacher-Training Fire School will be sponsored by the North Dakota Firemen's Association at Wahpeton, May 11–13. Write to Roy W. Johnson, Training Supervisor, Hillsboro, North Dakota.

South Dakota: The 24th Annual State Fire School will be held at Sioux Falls, June 1–5. Write to Robert W. Hanigan, Secretary, South Dakota Firemen's Association, Box 423, Pierre, South Dakota.

Tennessee: The Tennessee State Fire Service School will be held at Middle Tennessee State College, Murfreesboro, August 24–28. Write to W. A. Seeley, State Supervisor, T & I Education, 202 War Memorial Building, Nashville, Tennessee.

Texas: The Texas Firemen's Training School will be held at Texas A & M College, College Station, July 19–24. Write to H. R. Brayton, Director, Fire Service Training, Texas A & M College, College Station, Texas.

Utah: The Annual Firemen's Training School conducted by the Salt Lake City Fire Department will be held at Roosevelt Junior High School, Salt Lake City, June 18–20. Write to D. E. White, Assistant Chief, 144 East First South Street, Salt Lake City, Utah.

Washington: The Washington State Fire School will be held at Aberdeen, July 8–11. Write to Captain J. R. Cook, Assistant State Supervisor of Firemen's Training, P.O. Box 250, Olympia, Washington.

West Virginia: The West Virginia State Fire School will be held at West Virginia University, Morgantown, July 20–24. Write to R. E. Hanna, Jr., Fire Service Extension Schools, West Virginia University, Morgantown, West Virginia.

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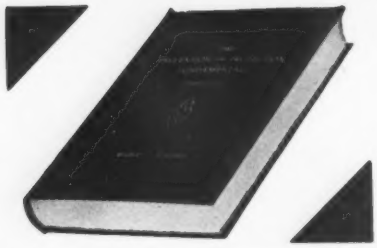

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This new reference and text simplifies virtually every fire prevention and protection problem, including new chemical hazards, atomic radiation, television and hundreds of others.

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"The Teacher-Fireman Team"

A 20-PAGE, 6 x 9 in. publication with the above title has been prepared by the National Education Association in cooperation with the National Fire Protection Association. It explains how teachers and fire fighters can cooperate to establish an effective fire prevention educational program for schoolchildren. It also includes some useful principles of public relations that fire departments may follow in establishing fire drill procedures and in conducting "open house" for youngsters visiting the fire station.

Single copies of the publication may be obtained for only 15 cents each. Discounts for quantity orders are: 2 to 9 copies, 10 percent; 10 to 99 copies, 25 percent; 100 or more copies, 33⅓ per cent. Write to the NFPA Executive Office, 60 Batterymarch Street, Boston 10, Massachusetts.

Kentucky Fire School

THE first full-scale tests of indirect application of water fog to be held in Kentucky will highlight the 25th annual Kentucky Fire School at the University of Kentucky, Lexington, on June 9 to 11.

Fog tests will be under the supervision of Emmett Cox, senior field officer of the Western Actuarial Bureau, Chicago, Illinois. School committee chairman is John L. Thomson, assistant manager of the Kentucky Inspection Bureau, Louisville.

Lectures, color slides and films of previous fog tests in other states will be presented on the morning of June 10. Tests will be run during the afternoon of the same day. Lexington firemen are making arrangements to burn a frame dwelling fully equipped with household items.

Full particulars may be obtained by writing to James M. Donovan, Jr., Kentucky Fire School Publicity Committee, 963 Starks Building, Louisville, Kentucky.

Firemen's Convention

THE Central Western Firemen's Association will hold their Annual Conference and Convention at Miamisburg, Ohio, on June 24. Information may be obtained by writing to Wm. H. Schneider, Secretary, Central Western Firemen's Association, Miamisburg, Ohio.

"Fire Service Ladders"

A WELL-ILLUSTRATED, paper bound volume with the above title has just been published by Case-Shepperd-Mann Publishing Corporation, publishers of *Fire Engineering* magazine. The book is authored by Roi B. Woolley, Associate Editor of *Fire Engineering*, and is a reprint of his pictorial series on the care and handling of all types of fire department ladders which has appeared in the magazine during the past two years.

This new 104-page book is designed to serve as a useful guide for fire schools, civil service examination boards, and fire service organizations of all types. In the front of the book is a useful glossary of terms and ladder definitions; also a brief historical background of fire department ladders.

The rest of the volume covers ladder standards, uses, and reach and capacity; techniques for testing ladders; placement; maintenance; then a series of ladder evolutions. Many of the evolutions illustrated were developed by the Joint Committee on Evolutions representing the NFPA Committee on Firemen's Training, the International Association of Fire Chiefs, and the Fire Department Instructors' Conference.

The book is priced at $2.00 per copy and may be obtained by writing to Case-Shepperd-Mann Publishing Corporation, 24 West 40th Street, New York 18, New York.

Tribute to FDIC

ON THE occasion of the Twenty-fifth Anniversary of the Fire Department Instructors' Conference the Honorable Clifford Davis, U. S. Representative from Tennessee, made a speech in the U. S. House of Representatives outlining the history of the fire service and citing many outstanding fires which point to the importance of fire protection and fire prevention. The speech was printed in the *Congressional Record* for Tuesday, March 10, 1953.

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Traffic-filled streets, limited manpower and greatly increased hazards are problems facing many fire officials today. The modern Mack aerial ladder apparatus has been expressly planned to meet these modern conditions.

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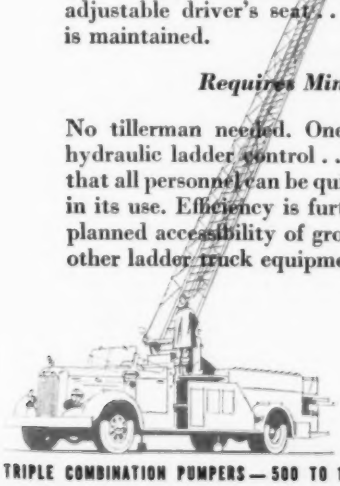

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Mack Type 85, 85 ft. aerial ladder truck recently delivered to West Springfield, Mass.

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Circul-Air is the patented, electrically operated hose dryer which circulates prewarmed fresh air through coiled wet hose at the rate of 5 to 6 air changes per minute. It's designed to lengthen hose life, improve the appearance and functional design of new fire houses, and to save floor space and hard work. No other drying method is so fast—so economical—so easy to use.

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Letter to FIREMEN

Gentlemen:

We would like to comment on the article entitled "Ladder Ruined in Paducah, Kentucky Fire," in the March, 1953, issue of FIREMEN.

The article states, "Where temperatures will exceed 150° F., aluminum alloy construction loses strength rather quickly with increasing temperatures."

The basis for such statements is a series of tests run by Aluminum Co. of America which required heating the alloy in an enclosed furnace for a minimum of 10,000 hours. This means that the temperature throughout the metal alloy fully reached the temperature at which the specimen was tested and was held at that temperature for a considerable period of time.

These tests show that there is a direct relation between strength losses and the time during which the metal is maintained at these elevated temperatures. In the case of Paducah ladder, test results given below on selected specimens show definitely that the temperature in the metal never exceeded about 300° F. except at the very top of the ladder. Alcoa test results show that loss of strength at this elevated figure requires heating for well over 100 hours before such temporary strength losses begin to approach any of the maximum losses listed in their tables of strength figures at elevated temperatures. To fully anneal any alloy it is necessary to use special annealing procedures under controlled conditions.

Additional tests run by Aluminum Co. of America at the instigation of Peter Pirsch & Sons Co., have proven that it is impossible to obtain these high temperatures in the metal when heated in the open air such as occurs at a fire. The temperatures in the metal can be obtained only by heating in an enclosed furnace.

We are enclosing our Form 287 illustrating how this test was run. (*Ed.* — This chart shows an aluminum rod inserted in a furnace. Temperatures were recorded at 10 minute intervals for one hour by electric thermo-couples in the center of the furnace, at a point on the rod outside the furnace 15 inches from the center; and at another point 23 inches away.) The furnace temperature was held above the melting point of the aluminum, but heat transfer in the rod was so rapid that the temperatures never exceeded the temperatures shown in the chart. The furnace temperature ran about 1350° F., but at the end of one hour, the temperature of the rod only 23" away from the center of the furnace was only 225° F. Also, the heat in the rod stabilized at this temperature and did not increase.

Temperatures up to 340° F. have no annealing effect on the metal since aging temperatures for the aluminum alloy in the ladder start at this figure.

The ladder returned by Paducah Fire Department to Peter Pirsch & Sons Co., was tested to determine what permanent effect the heat might have had. The evidence of the intense heat included the charcoal colored appearance of the top of the ladder, and the blisters in the rubber covering on the metal rungs.

The ladder was a 75-ft. four-section ladder, and specimens were selected from several points on all four sections. Strength tests were made on all of these specimens and were compared with the guaranteed yield strength and ultimate strength in the material as originally delivered to Peter Pirsch & Sons Co.

All of the test specimens in the first (or base section), second, and third sections exceeded the original guaranteed strength.

In the fourth, or top section, all of the specimens below the top eight feet of the ladder exceeded the original guaranteed strength.

The specimens selected from the top eight feet of the ladder ran a maximum of 11 percent below the guaranteed strength. In order to lose this much strength, the metal had to be heated to penetrate the core of the material and through its entire thickness. The fact that the load carrying elements in the ladder were solid, requiring heating of the core material as well as the thin surface material, was the reason why the permanent loss of strength extended for such a short distance on the length of the ladder. If the thin surface material had to absorb all of the heat, it probably would have warped from the intense heat causing far more serious damage.

The pictures of the ladder shown in your article confirm the test results. You will note that the ladder is pulled over in an arc or bow with an even bend and with no evidence of kinking in the rails. While the effect of the overload and blast did pull the sections to a very large side angle it was insufficient to permanently ruin the ladder. The three bottom sections could have been cleaned and surface damage repaired and put back in service.

The article as presented in FIREMEN refers to temperatures of 500° F., and up, and to strength losses which would cause large permanent damage. However, the temperatures confuse one main point — they do not differentiate between the temperatures recorded in burning structures and that in the ladder metal.

This Company has been building wood aerial ladders as well as aluminum alloy ladders for use with our powered hoist, since it was developed in 1930. In that period of time, we have never replaced one of these wood aerial ladders as a result of damage incurred at a fire. Since temperatures in burning structures can easily run 1000° F., and up, it is evident that such temperatures are not indicative of the temperature in the ladder material.

Very truly yours,
G. R. Layden,
Chief Engineer,
Peter Pirsch and Sons Company

CAPTAIN JAMES FLOWERS
Laurel Fire Department
Laurel, Mississippi

"Here's why I say... thanks a million for a Fireman's Helmet that CAN TAKE IT!"

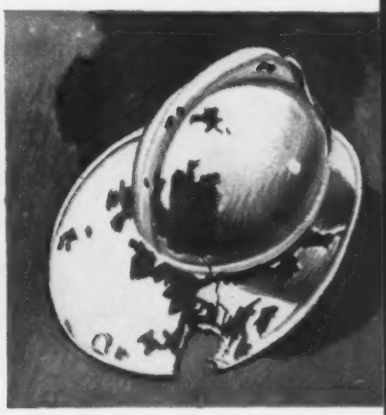
1. "Seconds after the alarm came in, we were on the truck and roaring out of the station.

2. "It was a concrete block theater building. All we could see were flames and smoke, and the heat was terrific. We rolled into action.

3. "I'd been manning a hose from a ladder position for about 5 minutes when the Chief yelled to come down, on the double.

4. "I just made the ground when the wall gave way. The air was filled with concrete—all of it headin' my way.

5. "I made a run for it, but a falling block crashed into my helmet, sent me sprawling. More followed, hitting my legs, back, feet.



6. "When it was over, my nose was broken, and I was plenty bruised. But thanks to your helmet, I was saved from serious injury, or death."

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You're doubly protected when you wear this proved helmet. The one-piece, high pressure molded construction takes bumps and blows without passing them on. Its high dielectric strength safeguards against electrical hazards—and because the laminated bakelite is non-absorbent, this protection isn't affected by moisture conditions. Ask for Bulletin No. DX-8, for complete details.

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Membership Report

AN ILLUSTRATED 8-page promotional booklet describing the benefits of NFPA membership and a number of NFPA publications of particular interest to fire fighters has been prepared for distribution. It will be especially useful to directors of fire schools and other NFPA members who may wish to encourage fire departments to enroll in the Association.

The booklet explains the "six-copy" distribution plan of FIREMEN and includes brief descriptions of other publications that have been published recently.

Quantity copies of the booklet may be obtained without charge by writing to the NFPA Fire Services Department, 60 Batterymarch Street, Boston 10, Massachusetts.

NFPA Welcomes:

The following fire chiefs and fire departments who have enrolled as new members. Current NFPA Fire Department membership is 2,067 fire departments and 25,056 men.

Alberta: Taber Volunteer Fire Department, Taber.

Florida: Chief Paul Pennington, Orlando Fire Department, Orlando; South Trail Area Volunteer Fire Department, Sarasota.

Indiana: Napoleon Volunteer Fire Company, Napoleon.

Iowa: Chief Meredith C. Minshall, Logan Volunteer Fire Department, Logan.

Kentucky: Chief Ernest P. Hannin, Paducah Fire Department, Paducah.

Louisiana: Patterson Volunteer Fire Department, Patterson.

Massachusetts: Chief Charles E. Nutting, Berlin Fire Department, Berlin; Edgartown Fire Department, Edgartown; Chief George W. Yonkers, Petersham Fire Department, Petersham.

New Brunswick: Chief P. M. Swim, Doaktown Fire Department, Doaktown.

New York: Chief Walter L. Schmidt, Central Islip Fire District, Long Island; Fairview Fire Company, Poughkeepsie.

North Carolina: Chief George W. Gardner, Greenville Fire Department, Greenville.

Nova Scotia: Chief Harold Thomson, Bible Hill Fire Brigade, Truro.

Ohio: Chief Merle M. Hand, Shaker Heights.

Oklahoma: Chief A. W. Lang, Enid Fire Department, Enid.

Pennsylvania: Fort Washington Fire Company No. 1, Fort Washington.

Wisconsin: Chief William Haupt, Kaukauna Fire Department, Kaukauna.

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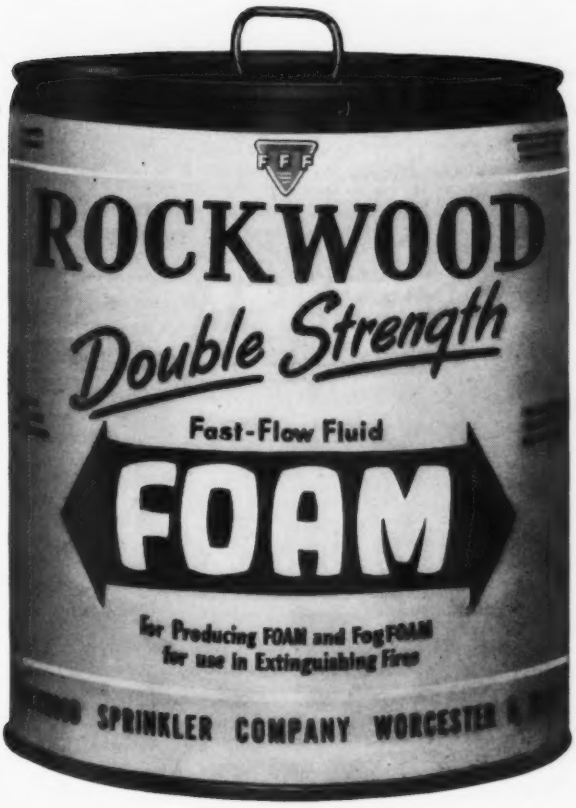

Rockwood's new Double Strength FOAM Liquid will put out fires in flammable liquids faster and at lower cost. Three parts of FOAM liquid mixed with 97 parts of water form an excellent foam blanket that will quickly re-seal if broken. Double Strength FOAM Liquid is more fluid, faster spreading and flows freely at sub-zero temperatures (−15° F.) It is quicker to put into action, covers burning surfaces faster, seals off combustible vapors completely and flows freely around obstructions. This foam blanket has proved its ability to extinguish large spill fires in gasoline with maximum speed and safety to firemen.

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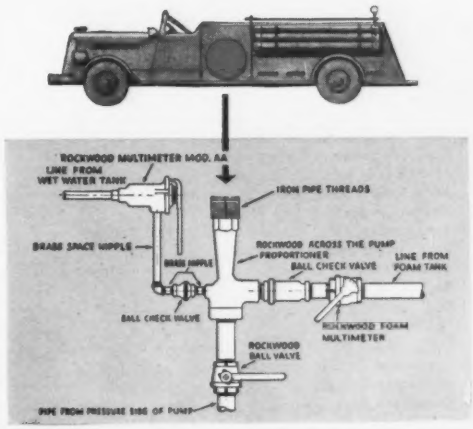

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Special Fire Truck Proportioning Systems for FOAM Liquid and Wetting Agents

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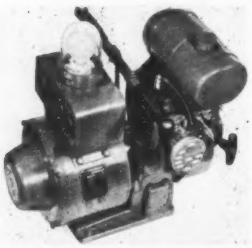
INDEX TO ADVERTISERS

	Page
Akron Brass Mfg. Company	6
American Fire Apparatus Company	5
Ansul Chemical Company	30
Guy Barnette & Company	8
Cairns & Brother, Inc.	26
Chesebrough Mfg. Company, Cons'd	21
Circul-Air Corporation	34
W. S. Darley & Company	39
Federal Enterprises, Inc.	4
Gamewell Company	2
Globe Mfg. Company	30
Hale Fire Pump Company	28
Clifford B. Hannay & Son	7
Howe Fire Apparatus Company	38
Mack Mfg. Company	33
McCulloch Motors Corporation	3
Midwestern Mfg. Company	36
Mine Safety Appliances Company	35
Powhatan Brass & Iron Works	36
J. P. Redington & Company, Inc.	28
Rockwood Sprinkler Company	37
Russell Uniform Company	34
Scott Aviation Corporation	31
D. B. Smith & Company	25
The Spectator	32
U. S. Rubber Company, Footwear Division (Industrial)	23
Waterous Company	27
Wooster Brass Division, Fyr-Fyter Company	38

What's New In Fire Equipment?



Portable Electric Power Plant

A lightweight gasoline-driven generator has been introduced by the Porter-Cable Machine Company, 18 Exchange Street, Syracuse, New York. The generator, available in two sizes, is designed to serve as a power supply for the company's 30 different portable electric tools. Model 119 is a 1500 watt direct current generator supplying 115 volts at 13 amps. It has a 3 horsepower, single-cylinder engine and four outlets, and weighs only 75 pounds. The Model 118 generator is similar to Model 119 except that it provides alternating current and weighs 135 pounds. It is equipped with a two-man carrying handle. Both generators are suitable for the Company's tools and any machines having universal motors and may also be used as standby power plants. For further information write to the manufacturer at the above address.

●

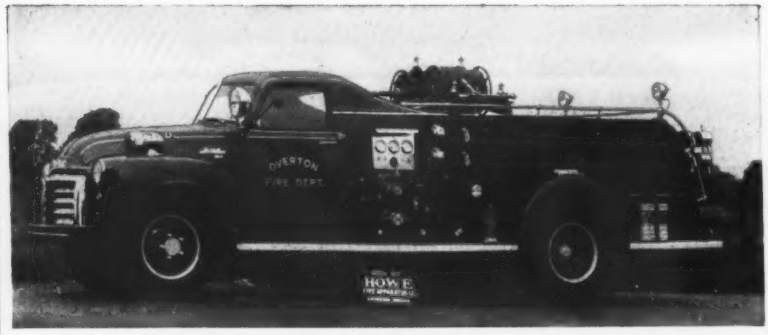
First Aid Burn Kits

First aid burn kits which include an Aerosol automatic spray dispenser containing Americaine, for pain-killing burn treatment, are being produced by the Davis Emergency Equipment Company, Incorporated, Safety Division, 45 Halleck Street, Newark, New Jersey. The company has also introduced a smaller kit with complete equipment for first aid treatment of burns. According to the manufacturer, Americaine is in the form of a greaseless, water soluble ointment, is antiseptic, excludes air, and kills pain almost instantly because of its principal active ingredient, 20 percent benzocaine, widely used as a local anesthetic. The standard large kits also include bandages and compresses. Carrying cases are of heavy gauge steel with baked-on enamel and retractable hangers for wall mounting. Literature on the kits is available upon request to the manufacturer at the above address.

●

Automatic Shut-off Safety Valve

Valco, Incorporated, 1410 West Street, Cincinnati 15, Ohio, has announced a new shut-off safety valve designed to check fuel supply in gas and liquid fuel lines. According to the manufacturer the valve is the quick-closing type that is normally held in open position by an Underwriters' Laboratories listed or Factory Mutual approved actuating head that operates like a standard sprinkler head. At specified temperature the head opens and releases tension on a heavy, stainless steel spring which closes the valve quickly. If debris or explosion knocks off the head the valve closes immediately to prevent fire or secondary explosions from the fuel in the line. Further information may be obtained from the manufacturer at the above address.



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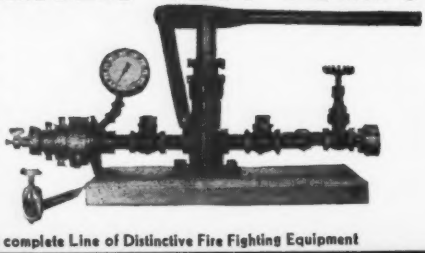

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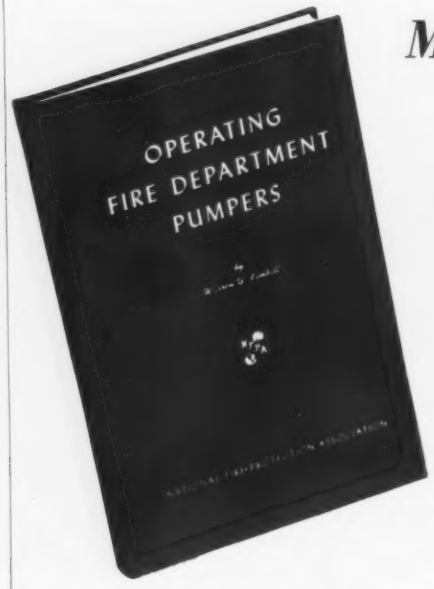

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